

reappraise his entire position on the treaty because of the one question which I now raise.

Mr. SPARKMAN. Madam President, I doubt that any member of the Committee on Foreign Relations or any other committee heard more of the testimony than I did, with the sole exception of the chairman of the committee, the Senator from Arkansas [Mr. FULBRIGHT]. I believe that he perhaps heard more than any other member of the committee. I listened to the witnesses who came before the committee. We did not merely pass over the question of blackout. We did not pass over the other developments of which the Senator has spoken. We questioned the scientists and the military experts before us. I admit that there was not a great deal of testimony in open session on blackouts, because when the time came for it, it was generally suggested that the discussion should be carried on in executive session.

But the testimony is given in the hearings after having been edited.

Dr. Norris E. Bradbury, Director of Los Alamos Scientific Laboratory, testified before us. His testimony can be found commencing on page 579. On page 581 he said:

A similar situation exists with respect to what may be called the nuclear blackout phenomena or the effect upon communications or radar of nuclear explosions in the relatively high atmosphere. Again, the phenomena is known, many excellent experiments were conducted to study it during the 1962 overseas operations, as well as earlier.

We are very far from being devoid of knowledge as to the nature of the problems involved. Limiting our knowledge in this area, as we will also have to limit our knowledge to that which we now have of other electromagnetic phenomena associated with nuclear explosions, is one of the risks which we would have to take.

To me, it does not appear to be a great risk, and it will be a challenge to see the extent to which our scientists with the available information can examine it, theorize upon it, and extend its applicability with reasonable confidence.

The subject was discussed in the report. On page 15 Senators will find a reference to it. We quoted from Dr. Harold Brown's testimony as follows:

With respect to high-altitude tests carried out for the purpose of determining the effects of nuclear bursts on communications blackout, radar blackout, and nuclear weapons vulnerability, Soviet and United States experience appears to be comparable. Each side has had about the same number of tests, over yield ranges and altitude ranges which are comparable though not identical. Enough has been learned in the United States to verify the existence, nature, and rough dependence of blackout characteristics on yield and altitude, although important details still have not been explored. The same is probably true in the Soviet Union. Probably neither side understands the phenomena sufficiently well to permit theoretical extension with complete confidence to some other altitudes, yields, and types of devices; but we have, and presumably the Soviets also have, enough information to enable us to take steps to design around our uncertainties.

That was the deliberate position of one of the leading scientists in our country. It was not a newspaper editor, publisher, or writer of newspaper articles

playing on the sensational angle of things. That was the sworn testimony of Dr. Harold Brown, who is one of the outstanding nuclear scientists in the world today.

Mr. HUMPHREY. Madam President, will the Senator yield?

Mr. SPARKMAN. I yield.

Mr. HUMPHREY. Dr. Harold Brown is the present Director of Defense, Research, and Engineering of the Department of Defense; is that not correct?

Mr. SPARKMAN. That is correct.

Mr. HUMPHREY. Does the Senator recall the testimony of the science adviser to President Eisenhower, Dr. Kistiakowsky, as it relates to Dr. Harold Brown?

Mr. SPARKMAN. I do. I made reference to it a while ago. I said that Dr. Harold Brown was an outstanding scientist and that Dr. Kistiakowsky would recommend that we take in full faith what Dr. Brown said.

Mr. HUMPHREY. In exact words Dr. Kistiakowsky said:

I would therefore urge that the committee give special weight to the testimony of Harold Brown, who, in my knowledge, is the only witness so far heard who can speak with real authority regarding the total ABM problem, and the related developments in offensive systems. He has access to all of the intelligence regarding Soviet activities and all of the expertise in the United States on our future capabilities that relate to the problem.

It seems to me that if a U.S. Senator is to judge the reliability and credibility of testimony, under this type of reference by one of the world's leading scientists, a man recognized in the United States as being one of the most able scientists in the field of nuclear energy and physics, Dr. Kistiakowsky, to accept the testimony of Dr. Brown as compared, I say most respectfully—

Mr. SPARKMAN. With a magazine article.

Mr. HUMPHREY. With a magazine article, even from an outstanding magazine.

I asked the Senator from South Carolina if I could see the article. The article is not at all conclusive. I should like to read the article, if the Senator will be kind enough to permit me to do so.

Mr. THURMOND. Madam President, the Senator has not seen the article. This is an editorial based on the article.

Mr. HUMPHREY. The Senator was looking at the editorial. Let us see what the editorial says. The editorial is not nearly as conclusive and definitive as is the Senator from South Carolina. It reads, in part:

The possibility of Soviet development of such an ABM system based on high-yield testing that the United States has not matched is not in itself a reason for rejection of the treaty.

Perhaps I ought to repeat that.

Mr. SPARKMAN. I think it bears repeating. People should remember that statement.

Mr. HUMPHREY (reading):

The possibility of Soviet development of such an ABM system based on high-yield testing that the United States has not matched is not in itself a reason for rejection of the treaty.

I continue to read from the editorial:

There are alternatives that may be acceptable risks, such as increased procurement of Polaris submarines.

Mr. SPARKMAN. I was about to mention that as a part of the system as to which there is no breakdown.

Mr. HUMPHREY. The Senator from South Carolina was talking about the effects of high-yield explosions on Minuteman missiles and on our silos, yet one of the great developments of our missile capability today—really, the secret weapon, if one can call a weapon a secret weapon—the weapon the Soviet Union has not matched at all, is the Polaris submarine missile system. We are producing Polaris submarines at the rate of one a month. Each Polaris submarine carries 16 tubes. Each one of those Polaris missiles which comes out of each of the 16 tubes will "lay low" a city of the size of Moscow—will "rub it out."

I often wonder exactly how much explosive power would satisfy the U.S. Senate. We have reached unbelievable megaton ranges. The bigger the megaton range the greater the demand for some kind of acceptable risk.

I am of the opinion that the testimony by Dr. Harold Brown and by Dr. York, both of whom have had most enviable records in highest positions of this Government in the field of research, should be accorded considerable weight by the Senate. It should carry even greater weight than testimony given by a general. A general uses weapons. Scientists make them, measure them, and know what they are about.

With one or two exceptions, scientists who have responsibility for nuclear weapons favor the treaty. I submit that when one is trying to make a value judgment on evidence by the military and scientific experts, any measurement one uses on the treaty will support the treaty, because of all the generals and military men who have spoken out, as the distinguished chairman of the committee has pointed out—I think there were 14 whose voices were heard—only 2 spoke in opposition to the treaty.

I believe that there were only two or three scientists who testified in opposition to the treaty.

When scientists of the quality of Dr. Kistiakowsky, Dr. York, Dr. Harold Brown, Dr. Bradberry, and others testify in favor of the treaty, I do not think we can reject that testimony on the basis of even the best of articles, whether it be published in Missiles and Rockets, or Fortune, or any other magazine. I do not care what magazine it is.

Mr. THURMOND. Madam President, will the Senator yield on that point?

Mr. SPARKMAN. I will yield in a moment.

Since we are speaking of generals who have been heard, I should like to know whether the Senator from Minnesota agrees with me in the contention that although there are hundreds of generals who serve, under our governmental system the military authorities who are charged by law with the responsibility of advising us on military matters—strategy, security, and things such as

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Mr. THURMOND. I do not know whether General Taylor has forgotten, or what has happened, but I say that the Joint Chiefs of Staff have unanimously approved a military requirement for a high-yield warhead, one for manned bombers and one for missiles, but that the requirement has not been approved at the civilian level. If the Senator from Alabama will go to the Preparedness Investigating Subcommittee and he will contact Mr. Kendall, chief counsel, he will find such a statement in the testimony.

This testimony is, of course, classified, but it is there nevertheless. If possible, I am going to get it declassified so the Senate and the public can have full access to this vital information, especially in view of the point raised here today by the Senator from Alabama in reading from the unclassified hearings of the Foreign Relations Committee.

We have been handicapped by not being able to bring all the testimony to the Senate, because that testimony is not printed in the hearings of the Preparedness Subcommittee, because most of it is highly classified.

Mr. SPARKMAN. Madam President, the committee having jurisdiction of the treaty and handling the hearings is the Committee on Foreign Relations. We have brought the hearings here, and we brought them in a way that is presentable, readable, and clear to the Senator. The hearings have been edited, so far as secret or classified material is concerned. The testimony includes that of several persons who are supposed to speak for the defense and security of our country—the scientists; the Chairman of the Atomic Energy Commission, Mr. Seaborg; the Director of the CIA, Mr. McCone; and the top scientists and advisers to the President of the United States. We heard the testimony of all those persons, who under the law, are supposed to speak.

As regards the printed hearings, Senators do not have to go to the committee or anywhere else for the testimony, although a few items are retained as confidential in the committee files. Any Senator can go right downstairs to the committee room and can be shown the secret testimony.

I refer particularly to the testimony of Mr. McCone, Director of the Central Intelligence Agency; I also refer to the testimony of Dr. Northrop; and I also refer to the secret testimony of General Taylor, Chairman of the Joint Chiefs of Staff.

Madam President, many questions which have been asked by the Senator from Maine [Mrs. SMITH] have been brought up in the course of this debate. I should like to refer now to the first and second questions; there are 16 altogether.

We have discussed one, and had just started our discussion of the second. The second one is whether we are reasonably confident and secure in the knowledge that our ballistic missile retaliatory second strike force will survive and operate in a nuclear environment.

Certainly there is no controversy with reference to that. I believe everyone

admits that we do have sufficient power to enable us to make a retaliatory strike that would be destructive to any enemy that might attack us.

Mr. THURMOND. Madam President, will the Senator from Alabama yield on that point?

Mr. SPARKMAN. Yes, I am glad to yield.

Mr. THURMOND. Has the Senator from Alabama seen the issue of Missiles and Rockets, dated September 14—last Saturday?

Mr. SPARKMAN. I have not yet seen that issue.

Mr. THURMOND. This magazine contains an article and an editorial on this very question. I hold the editorial in my hand. It reads in part as follows:

The article on page 14 of this issue probably is the most important published by this magazine since its founding. It brings out into the open the critical and highly classified problem which has been at the heart of the opposition to the nuclear test ban treaty by many nuclear scientists and high-ranking Air Force officers. The fact is that the Soviets may have found the answer to their antiballistic missile problem by attaining the ability to render U.S. missiles inoperational in their silos.

The possibility is more than a threat to the effectiveness of U.S. missile forces. If true, it threatens to negate the whole deterrent posture of this Nation by making possible enemy deactivation of the heart of U.S. nuclear strength.

Then the editorial points out the dangers. In other words, if through the tests the Communists have conducted in 1961 and 1962, they have gained technical knowledge that will enable them to drop a bomb, inasmuch as we have said we will not make the first strike, what if they should make the first strike, and if this knowledge has enabled them to drop a bomb that will produce an electromagnetic phenomenon—if we want to call it an electric current—that will blow out the fuses on our missiles, or will fuse the wires in our missiles and thus prevent them taking off or would render ineffective much of the guidance systems, so we never would be able to get them out of the silos properly and on their way to the target. Then the question which would naturally arise is, where would we be? That is a possibility that our military people, I can state, are deeply concerned about; and that is the information that has been gained in the recent tests by the Soviets. If they did gain sufficient knowledge to be able to make our missiles inert or inoperable in the silos, and since Secretary McNamara is "phasing out" our bombers—so that soon we shall not have any bombers, and if, therefore, we do not have any bombers, and if our missiles are made inert and inoperative, where will America be?

I question statements which state unequivocally that we will be able to make a second strike. I should like to have the Senator explain how we shall be able to make a second strike if a missile or missiles are dropped over here by the Soviets will destroy the electronic systems of our missiles. If the Soviets have gained this knowledge and can manufacture such a weapon, they will do that

or threaten to do that; and then where will we be?

The only answer to that question that I know is that we shall have to test in the atmosphere to gain the requisite knowledge to prepare the installations and equipment necessary in order to protect the missiles. Otherwise we may find ourselves in a helpless condition.

That again brings to the forefront the need for atmospheric testing. That is no phony objection raised to the treaty. It is a direct reality. It is a reality that has been pointed out by the magazine Missiles and Rockets, an engineering magazine whose editors feel that the treaty is an extremely dangerous instrument because of the very fact I have mentioned. If the Communists are able to drop a bomb in our country and to neutralize our missiles, we shall not be able to send our missiles over to Russia to strike their targets in retaliation, and we shall not have the necessary knowledge with which to insulate the missiles and pursue a course which might provide protection for them.

What other course can we pursue to protect our Nation than to test in the atmosphere? That is the only way in which we can get the information.

If the Senator from Alabama can answer or explain away that question, I would certainly like to hear him do so. The military people—and I have talked to them—and some of the scientists are deeply concerned about this question. If the Senator will read the classified testimony given before the Preparedness Investigating Subcommittee again, I believe it will be of great interest to him.

We are handicapped in not being able to bring to the Senate classified information which the people of our country ought to hear so that they could truly know the dangers involved with regard to the very vital point that I am now making. If the people of America knew all of the information, and if they knew the jeopardy in which we would place our country by stopping atmospheric testing when we should go ahead as fast as we can in order to attempt to protect these missiles—because we will be dependent upon them—in my judgment there would be no doubt as to the answer of the American people to the question.

I would be pleased to have the Senator from Alabama read that classified testimony, and after he reads the testimony that was given before the Preparedness Investigating Subcommittee, I would be further pleased if he would come back and express himself.

He may change his opinion. If the Senator from Alabama is completely objective on the treaty—I am not insinuating that he is not—but if he is willing to change his mind when something of great significance and importance is brought out, I believe that the Senator from Alabama might wish to reappraise his position. If he will read carefully the classified testimony in the Preparedness Investigating Subcommittee on this question, if he will talk in person with General Power and some of the other experts, including General Schriever and others, and if he will look into the subject further, he may wish to

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that—are the Joint Chiefs of Staff, headed by the Chairman of the Joint Chiefs of Staff.

Mr. HUMPHREY. The Senator is obviously correct.

Mr. SPARKMAN. The Senator spoke of 14 generals, and of 2 being against the treaty. I do not remember any general testifying before our committee against the treaty. I do not know where the Senator got his information.

Mr. HUMPHREY. General Power is against the treaty.

Mr. SPARKMAN. Did he testify before our committee?

Mr. HUMPHREY. He is one of the field commanders who were questioned.

Mr. SPARKMAN. By our committee?

Mr. HUMPHREY. By the Joint Chiefs of Staff. The Joint Chiefs of Staff asked all the commanders in the field what they thought about the treaty, and if they had any views on it. As I recall, General Power, the head of SAC, spoke against the treaty. One officer said that he had no opinion, since he had not given it what he thought was adequate consideration. All of the other commanders, as will be seen from page 407 of the hearings, were for the treaty.

The chairman of the committee asked General LeMay a question in this regard. If I may, I will read it for the information of the Senate:

The CHAIRMAN. General LeMay, do you know whether or not the commanders in the field, I believe they are referred to as unified commanders in the field, such as those at CINCLANT, Admiral Felt and other officers, have been requested to give their personal views on the acceptability of this test ban treaty?

General LeMay. Yes, sir; the Joint Chiefs asked their views on it and they were forwarded, I think, without exception.

The CHAIRMAN. Could you tell the committee how these commanders in the field felt about this treaty?

General LeMay. I can't list them all word for word. I think generally most of them were in favor of it.

The testimony then goes on to reveal that one withheld his comment and that General Power, for whom we have great respect, was opposed to the treaty. General Power is commander of the SAC operations.

All the other commanders, all those who read Missiles and Rockets, all those who consult, were for it.

It seems to me that is a reasonably good body of evidence in support of the military aspects of the treaty.

I have constantly heard it said that militarily the treaty involves unacceptable risks. If so, we had better remove the field commanders, because this Senator had to take advice from those field commanders. If the treaty involves unacceptable military risks, and these commanders say that the treaty is acceptable, something is wrong, and the Commander in Chief had better take a look at what kind of commanders he has in the field. I think the Commander in Chief knows what kind of commanders he has in the field. They are reliable, experienced, able, competent commanders. Their advice was asked. Their

advice was given. Their advice was in favor of the treaty.

Mr. THURMOND. Madam President, will the Senator yield?

Mr. SPARKMAN. Madam President, I appreciate the comments by the Senator from Minnesota in that regard. The Senator referred to General Power as being opposed to the treaty. General Power's superior said that he would favor it.

Mr. HUMPHREY. The Senator is correct.

Mr. SPARKMAN. Taking all military and political factors into consideration.

Mr. THURMOND. Madam President, will the Senator yield?

Mr. SPARKMAN. I yield to the Senator from South Carolina.

Mr. THURMOND. We are all in favor of the Polaris program. I have supported the Polaris program vigorously. I expect to continue to do so.

The Polaris submarine does not fire its missiles at once in a salvo. The Polaris fires only one missile at a time.

Information published in the Washington Evening Star some time ago brought out that the Soviets have an antiballistic missile system at a certain city in Russia. Our intelligence reports showed, according to that article, that the antiballistic missile system at this particular city was capable of knocking down medium range missiles, that is, those with a range of up to 1,200 miles; and intermediate range missiles, that is, those with a range of up to 2,500 miles; and, under certain favorable conditions, intercontinental ballistic missiles, that is, those which will go from 5,000 to 7,000 miles.

If the Soviets continue to develop their present antiballistic missile system as they have already done, we can see that even with our Polaris system, which fires only one missile at a time, we shall be in jeopardy.

With regard to the various officers who testified, General Power testified in the Preparedness Investigating Subcommittee. Much of his testimony is classified. I cannot go into all the details. Again, I refer the distinguished Senator from Alabama to the classified committee testimony and urge that he read it. General Power said—and this is in the report of the Preparedness Subcommittee—that, in his opinion, the treaty is not in the best interest of the United States. That is General Power's statement.

Who is General Power? General Power is the man who is responsible for launching the missiles and the nuclear weapons, and other weapons, against the enemy. He is the one man in the whole free world—not only the United States, but the whole free world—who has a chance to try to save us and the rest of the free world. General Power is the man who would send these missiles through the air; he would send nuclear weapons by manned bombers from different points of the world; and he stated to the Preparedness Investigating Subcommittee, unequivocally, that this

treaty was not in the best interest of the country.

I believe the Senator from Alabama said that his "boss" said he went along with the treaty. General LeMay did go along with the treaty, but what did he say? He said he would probably have recommended against the treaty had it still been in the proposal stage—this is, he was told to take into consideration the political aspects which he was not qualified to assess.

I wish to read two or three lines from General Power's testimony, because I think it is important for the people of America to know that this one commander, who is responsible for protecting this country, in delivering weapons on the enemy if an exchange begins, said:

I feel that we have military superiority now, and I feel very strongly that this has resulted in a world that has been free from nuclear warfare. I have the lowest confidence factor that we can and will maintain that military superiority under the test ban treaty.

So he is very much concerned. He went even further in the Preparedness Subcommittee. I cannot go into his statement there.

We talk about the generals. I come next to General Schriever. Who is General Schriever? He has charge of the development of these missiles. He has charge of the development of our Air Force weapons systems. What did he say? He told the subcommittee that there are definite military disadvantages to the treaty, and that as a military man he felt he could protect the country better without the treaty than with it.

If we want to consider the treaty on political grounds, then one must put it on that basis if he is for the treaty. I say that one cannot consider it from a military standpoint and adopt it. It must be considered from the political aspect; that is, more weight must be given to political rather than military considerations.

There was another general who came before our committee.

By the way, did not the Senator from Ohio request that General Power be heard by the Foreign Relations Committee, and was not that request refused?

Mr. SPARKMAN. I cannot say. I will not say that he did or did not.

Mr. THURMOND. I am informed that that is the case.

Mr. HUMPHREY. Madam President, will the Senator yield on that point? Let us get the record straight.

Mr. SPARKMAN. I yield.

Mr. HUMPHREY. I do not believe that the immediate superior of General Power, who is General LeMay, is anybody's lackey. I do not believe he lies down and plays dead when somebody says, "Take my view." He is a man of conviction. He reported General Power's point of view. He also knew that he had testified before the Preparedness Subcommittee. General Power is an officer in the line. He does not control the country. He is under the command of General LeMay; and I think the chairman of the committee will say un-

der whose command he is. There is a Commander in Chief, after all.

Mr. THURMOND. I feel General LeMay knows in his heart that he did not want the treaty, and that he would not have recommended it had it been in the proposal stage. The chairman of our subcommittee [Mr. STENNIS] pointed out Friday that he did believe the Joint Chiefs had their hearts in their subsequent testimony before our subcommittee in which this time they gave qualified endorsement based on political factors supposedly offsetting the military disadvantage they listed.

Mr. HUMPHREY. I protest that accusation of General LeMay. General LeMay is a man of conviction and honor. I do not think he would have come before 3 committees and testified in behalf of the treaty—recognizing the limitations and risks, but at the same time coming out for the treaty—unless he thought it was all right. These gentlemen are men of conviction. Many of them in the past have resigned when they disagreed with the civilian authorities. The Senator from Minnesota says General LeMay would not tell an untruth; he would not falsify the record; that he said what he believes; and that belief is in the record. He said he supported the treaty. The Senator can twist it and turn it inside out and outside in, but that is General Power's testimony on the treaty.

Mr. THURMOND. I do not twist and turn like the Senator from Minnesota. I am not accustomed to twisting and turning and using a lot of gab like the Senator from Minnesota. I am going to mention facts and twist words as he has mine.

Mr. HUMPHREY. Madam President—

The PRESIDING OFFICER. The Senator from Alabama has the floor.

Mr. SPARKMAN. Madam President, I have been trying to be quite generous in yielding.

Mr. THURMOND. I want to make this point in reply—

The PRESIDING OFFICER. Does the Senator from Alabama yield to the Senator from South Carolina?

Mr. SPARKMAN. Let us keep to one point at a time. I yield to the Senator from South Carolina.

Mr. THURMOND. There was another general who testified, and that was General Twining. General Twining testified very strongly against the treaty. He is a former Chairman of the Joint Chiefs of Staff. He is not now directly under the gun, but he has been asked by the Air Force to head a committee to study matters of this kind, and they have been studying this question. He has been briefed recently with the latest intelligence. General Twining testified in a very magnificent manner and gave his reasons, very strongly, as to Soviet superiority in certain critical areas of nuclear technology and capability and as to why this treaty should not be adopted. I cannot go into the reasons here because the Defense Department has his testimony highly classified. Again I refer the Senator from Alabama and other Senators to the Preparedness Investigating Sub-

committee hearings. All those who know General Twining know, I think, that he is a very able and distinguished man.

Admiral Burke, former Chief of Naval Operations, was before the subcommittee, and Admiral Radford, former Chairman of the Joint Chiefs of Staff, submitted a statement which was included in the record of the hearings of the Senate Foreign Relations Committee.

At least five officers of general or flag rank—General Power, General Schriever, General Twining, Admiral Radford, and Admiral Burke—testified against the treaty. We also received much valuable classified information from other military personnel in key and sensitive assignments.

Mr. HUMPHREY. Madam President, will the Senator yield?

Mr. SPARKMAN. I should like to say just a word on that comment. I have said it many times during the afternoon. I have been referring to the hearings before the Foreign Relations Committee. I have drawn my citations from those hearings. They are what I consider to be the official hearings. The Foreign Relations Committee is the committee that has jurisdiction over treaties. It held hearings.

When I speak of the various witnesses who appeared, I am speaking about witnesses who appeared before that committee, and not some other committee at some other time, somewhere else. I am referring to witnesses who appeared before the Foreign Relations Committee. Our committee published notice of the hearings before they were started. Anyone could have replied. A bipartisan subcommittee of the Foreign Relations Committee decided upon the witnesses to be called. I believe a logical course was followed. We called first the Secretary of State. Then we took the testimony of the Secretary of Defense. Then we took the testimony of the Joint Chiefs of Staff, the chairman of the Joint Chiefs, the head of the Atomic Energy Commission, and the head of the Central Intelligence Agency. We took the testimony of outstanding scientists. We called in Dr. Teller as an independent witness.

We heard Dr. York. We heard Dr. Bradbury. We heard Dr. Foster. We did not select witnesses who we felt were either for or against the treaty. We selected witnesses who had knowledge and had policymaking responsibilities.

Mr. CARLSON. Madam President, will the Senator yield?

Mr. SPARKMAN. I yield.

Mr. CARLSON. I merely wish to confirm what the distinguished Senator has said about the hearings. There were 3 weeks of hearings. As one of the Senators who attended quite regularly, I wish to say that the distinguished Senator from Alabama was one of the most attentive at the hearings. He has just stated that we did not try to select the witnesses. We heard testimony for and against the treaty. We have over a thousand pages of testimony before us in the Senate. I feel that the hearings were very conclusive.

Mr. SPARKMAN. I thank the Senator. I appreciate his remarks. I said a

while ago that I believe no member of the committee, except possibly the chairman, who was there practically all the time, heard more of the testimony than I did. I would put the Senator from Kansas in the same category, because he attended regularly. I was impressed by the hearings. I was impressed by the fact that these people were telling things as they saw them and as they understood the facts to be.

Mr. CARLSON. The distinguished Senator from Alabama was present practically all the time. I was not quite as often in attendance as he was, but I did attend most of the sessions.

Mr. SPARKMAN. If the Senator from Kansas was not present as often, he came very close to being there all the time. He was certainly present most of the time. I do not believe I ever attended hearings that were fairer or more adequate than these hearings.

Madam President, I am a lawyer. I practiced law before I came to Congress. I enjoyed practicing law. I was a courtroom lawyer. I know something about preponderance of evidence. Of course there were differences of opinion. Some of the experts saw things one way and some saw them in another way. When they started to draw conclusions, they drew differing conclusions. Some of the experts saw a risk involved where another expert saw no risk involved. So it went. However, when we look at the subject as a whole, and measure it from the standpoint of preponderance of evidence, I must say that I have never seen a case develop that had greater preponderance of evidence in favor of a matter than this one has in favor of ratification of the treaty.

As the Senator from Minnesota has said, the military experts are the advisers to the United States. The Chairman of the Atomic Energy Commission heads the Commission that has jurisdiction over that awful power. I mean "awful" in the right sense. It has vast powers and responsibilities. We also heard the head of the Central Intelligence Agency.

I wish to stress again that downstairs in the committee room are to be found transcripts of the testimony of Mr. McCone, the head of the Central Intelligence Agency; and any Senator who desires to do so may read the whole, unexpurgated testimony of Dr. McCone. The same is true of Dr. Northrup. His is perhaps among the most interesting of all the testimony given during the entire hearing. It would give a lift to Members of the Senate to go downstairs and read the testimony of Dr. Northrup.

Mr. CARLSON. Madam President, will the Senator yield?

Mr. SPARKMAN. I yield.

Mr. CARLSON. The hearings would have been much more voluminous had all the testimony been printed.

Mr. SPARKMAN. Probably twice as big.

Mr. CARLSON. Much of the testimony was in executive session. If all of it had been printed, hundreds of pages of additional testimony would be before us.

Mr. SPARKMAN. Would not the Senator agree with me that it would

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Mr. SPARKMAN. I do not have the figures before me; but I am sure the Senator from South Carolina has, and I am willing to concede that point, if he says it is so. It is highly repetitious. The figures are in the Record, but I do not have them before me now.

Mr. THURMOND. In terms of weight and yield, is it not true that the Soviet Union has demonstrated clearly a superior performance in all yield classes above approximately 15 megatons, a field in which the United States has had no experience since 1954?

Mr. SPARKMAN. That is all set forth in the figures we have placed in the Record. I do not have them before me at this time. I am sure the Senator from South Carolina has the figures.

Mr. THURMOND. All the scientific witnesses were unanimous in expressing uncertainty about the particular designs employed by the Soviets. Is it not true that above one megaton, the Soviets conducted four times as many atmospheric tests in the period 1961-62 as did the United States in the same period?

Mr. SPARKMAN. Those figures are shown in the tables placed in the Record. I do not have them before me at this time. But if the Senator from South Carolina says his information comes from those figures, I am willing to accept it as being correct.

Mr. THURMOND. Is it not true that a large number of the U.S. tests have been for the purpose of improving detection capabilities, and for peaceful uses of nuclear explosions—that is, the Plowshare project?

Mr. SPARKMAN. I feel certain that the Senator is again correctly quoting figures that have been placed in the Record. I have been reminded by the distinguished Senator from Vermont [Mr. AIKEN], who is not only a member of the Committee on Foreign Relations but also a member of the Joint Committee on Atomic Energy, that the Soviet Union was conducting tests, a great number of which were in the same field in which the United States had conducted tests years before. I am sure the Senator from South Carolina would recognize that fact, would he not?

Mr. AIKEN. Madam President, will the Senator from Alabama yield?

Mr. SPARKMAN. I yield.

Mr. AIKEN. The United States conducted tests with bombs of up to 15 megatons, or possibly a little more, a number of years ago. I do not remember the year. If I had to guess, I would say it was 1954. The Soviets conducted many tests in the past few years with similar-sized bombs, and also one or two tests—I do not know exactly how many—with bombs that were larger. I believe the largest bomb they tested was about 60 megatons.

The Senator may recall that when the United States tested bombs of 15-megaton power, the tests were conducted in the belief that the same principle would apply to larger bombs, and it was decided, rightly or wrongly, that there was no need to test larger sized bombs.

Further than that, the United States would have difficulty in obtaining a place to test them, whereas Russia can test a 150-megaton bomb in her Arctic region without having to clear a space of 300, 400, or 500 miles, which would be one of our handicaps.

However, Russia has tested larger bombs in the last 2 years, while our people did not feel it was necessary for us to do so.

Mr. SPARKMAN. I appreciate the statement made by the Senator from Vermont.

Mr. THURMOND. Is it not true that the Joint Chiefs of Staff have found that the Soviets are ahead of the United States in the development of an anti-ballistic-missile system?

Mr. SPARKMAN. I do not recall. I believe Secretary McNamara said that the Soviet Union could be reckoned as being ahead of us in high-yield weapons. When it came to antiballistic missiles, if I recall correctly, all the testimony was to the effect that the situation was virtually a standoff. Aside from that, I call attention to the fact that whatever the Joint Chiefs of Staff may have found, they have resolved their doubts and differences in favor of the ratification of the treaty, and they recommend to the Senate that it be ratified.

Mr. THURMOND. From a political standpoint. They are taking into consideration the political angle, also.

Mr. SPARKMAN. Let us put it this way: They are taking into consideration the interest and security of the United States, from whatever angle they must be considered, and have recommended the ratification of the treaty.

Mr. THURMOND. They have been told to take into consideration the political aspects. Did they not state that there were military disadvantages to be stressed? If one reads the statement by the Joint Chiefs of Staff, it sets forth that to bring about world stability, it is necessary to take into consideration the political environment.

Mr. SPARKMAN. Does not the Senator believe that consideration should be given to those factors?

Mr. THURMOND. That is all right; but the Joint Chiefs of Staff were told to take the information that had been given to them by the State Department, and assume that it was correct, and then take into consideration the political aspects as well as the military aspects. General LeMay said he was not an expert in the political field, but that he was ordered to take that aspect into consideration. I shall cover that point more fully in a speech I expect to make on this subject, probably tomorrow. But from a military standpoint, not a single one of the military men, as I recall, said that the treaty was advantageous to this country.

On the ABM system—

Mr. SPARKMAN. Is the Senator about to move to another subject?

Mr. THURMOND. No. We had been talking about the anti-ballistic-missile system. With respect to that system,

there is no question about the position taken by the Joint Chiefs of Staff. It is in writing. It was made in highly classified hearings before the Preparedness Investigating Subcommittee.

The experts have all agreed that the Soviets are ahead of the United States in the development of an anti-ballistic-missile system. The Preparedness Investigating Subcommittee has that testimony before it.

How can we ever catch up with the Soviets in the development of an anti-ballistic-missile system, which has to be fired in the atmosphere, unless we can conduct tests in the atmosphere, in the type of environment which the anti-ballistic-missile system will have, in my opinion, if it is called upon in the event of an exchange?

Mr. SPARKMAN. I feel that I have answered that question about three times. I believe this is a fair summarization of the testimony of all the witnesses—Secretary McNamara, the Chairman of the Joint Chiefs of Staff and the staff members of the Joint Chiefs of Staff, Mr. McCone, and those closely connected with this activity. The testimony as a whole was to the effect that in considering the antiballistic missile, they had to take into account the various things that had to be done; and the development of warheads was only one. The testimony was to the effect that we had developed warheads and had an ample supply already on hand, and that the stocks needed with reference to guidance systems, and perhaps with reference to the vehicle to carry them there, could be developed without any limitation whatsoever, so far as the test ban treaty was concerned; and that, therefore, each and every one recommended our approval of the treaty.

Mr. THURMOND. The Senator feels, then, that there will be no handicap to the development of our anti-ballistic-missile system, although we would not be allowed to test in the atmosphere, despite the fact that since these warheads have been built and designed, the Soviets have conducted their large-yield tests with tremendous explosions? How does he know that our warheads will meet that test?

Mr. SPARKMAN. Let me read from the statement of the Joint Chiefs which has to do with the effects of the treaty on the United States-U.S.S.R. balance of military power.

The Joint Chiefs of Staff concluded that the United States would not be able to overtake the present advantage which the U.S.S.R. probably has in the high-yield weapons field, whereas the Soviets, by underground testing probably could retrieve in time any lead which we may presently have in the low-yield tactical field. Both sides could achieve an antiballistic missile, but one with less desirable characteristics than would be the case if additional atmospheric tests were conducted.

That applies to both sides. Of course there would be some handicap; but it would apply to the U.S.S.R., just as well as it would apply to the United States.

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Mr. THURMOND. The treaty would freeze it at the point where we have now developed it, would it not?

Mr. SPARKMAN. Yes.

Mr. THURMOND. Who is ahead now?

Mr. SPARKMAN. I should have stated the conclusion they reached as to U.S. weapons capability; this is the one which deals with the anti-ballistic-missile field. The Joint Chiefs of Staff said:

In the anti-ballistic-missile field, development of the U.S. system does not depend upon atmospheric testing, and hence this treaty will not significantly influence any imbalance that may exist.

That is not a political decision; it is a military decision. That is a decision of those whom Congress, by law, has designated to be the military experts and advisers for the security of the United States.

Mr. THURMOND. The treaty will prohibit that development by both; but the Soviets are ahead now, and this freeze—

Mr. SPARKMAN. The treaty does not say that.

Mr. THURMOND. I am giving the Senator the statement of the Joint Chiefs of Staff.

Mr. SPARKMAN. I can read further from their statement.

Mr. THURMOND. In their statement to the Preparedness Subcommittee, they admitted that the Soviets were ahead; and in their second statement, when they came before us, the Joint Chiefs of Staff admitted that the Soviets were ahead of us in the anti-ballistic-missile field, and that the treaty would tend to freeze their lead, and that the only way we could ever overcome that would probably be by testing in the atmosphere.

Today we may be in the lead, to a certain extent, in testing underground; but the treaty would partially overcome that situation. But we can never overcome the lead that the Soviets now have, unless we test in the atmosphere; and that fact is borne out on page 7 of the report of the Preparedness Subcommittee, as follows:

An ABM system will be required to function in the nuclear environment created both by its own defensive warhead explosions and those of the attacking enemy. Under such circumstances it is important to be as certain as possible that no element of the system possesses unknown vulnerabilities to nuclear effects. All electronics components of the ground arrays and missiles must function; the missiles must be capable of operating in the presence of nuclear, thermal, and blast effects; the warheads must be resistant to nuclear radiations. It is apparent that unless a system of such complexity is tested in its operational environment, there will be a low level of confidence in its ability to perform the mission for which it was designed and produced. Many unknowns will arise in the course of the ABM development program which can only be explored and satisfied through the medium of atmospheric and high altitude nuclear testing.

I wish to repeat the last sentence; it is important:

Many unknowns will arise in the course of the ABM development program which can

only be explored and satisfied through the medium of atmospheric and high altitude nuclear testing.

That report was agreed to by all of the committee.

Mr. SPARKMAN. From whom is the last sentence quoted?

Mr. THURMOND. That is the conclusion based on the facts presented to us—

Mr. SPARKMAN. By whom?

Mr. THURMOND. By the Joint Chiefs of Staff and by the other military and scientific advisers who appeared before us.

Mr. SPARKMAN. Who made the statement?

Mr. THURMOND. The Preparedness Investigating Subcommittee.

Mr. SPARKMAN. This is its report?

Mr. THURMOND. Yes.

Mr. SPARKMAN. But I have been quoting from the statement of the Joint Chiefs of Staff.

Mr. THURMOND. This statement was joined in by all seven members of the subcommittee. All seven members of the subcommittee agreed on the accuracy of the report; and the Joint Chiefs themselves have admitted, before this subcommittee, that the Soviets are ahead of us in the development of the antimissile system. The Senator can go to the subcommittee and read the classified testimony there for himself.

Mr. SPARKMAN. Madam President, instead of quoting from conclusions by me or from conclusions by members of the Committee on Foreign Relations, I wish to quote from the Joint Chiefs of Staff themselves. They are the ones Congress says should be the advisers to the United States on military and security matters. So I shall quote their own words; and I wish to make that clear. This testimony is to be found on page 273 of the hearings of the Committee on Foreign Relations. Madam President, I wish to call attention to the fact that, under the rules of the Senate, the Committee on Foreign Relations has jurisdiction over treaties. Our committee held hearings on the proposed treaty. We invited members of the Armed Services Committee and members of the Joint Atomic Energy Committee to sit with us, and they did. The Joint Chiefs of Staff testified before our committee, and I shall now read from their statement, as found on page 273 of the hearings of the Committee on Foreign Relations on the treaty.

(b) In the anti-ballistic-missile field, development of the U.S. system does not depend on atmospheric testing, and hence this treaty will not significantly influence any imbalance that may exist.

I think that is as clear as it could be.

Mr. THURMOND. But will the Senator read the preceding sentence, in which they say the indication is that the U.S.S.R. is ahead of the United States in the high-yield field?

Mr. SPARKMAN. Certainly. I have seen that, and I have already read it. However, again I call attention to the fact that the same members of the Joint Chiefs of Staff testified that when we had free and unlimited testing rights, the Joint Chiefs of Staff, along with the scientists and others in charge of this

program, deliberately reached the decision that they did not care to make high-yield tests in the atmosphere.

We had decided that for our purposes a multiplicity of relatively smaller weapons was preferable to massive single-shot weapons.

Mr. THURMOND. Did Dr. Teller reach that decision?

Mr. SPARKMAN. I do not recall Dr. Teller's testimony on that particular point. I know that Dr. Teller testified before us that he had changed his mind from one period of time to another. I do not know whether it was on that particular subject or not.

Mr. ELLENDER. Madam President, will the Senator yield?

Mr. SPARKMAN. I yield to the Senator from Louisiana, who has been on his feet for a long time.

Mr. ELLENDER. Madam President, the Senator from South Carolina has quoted from the committee interim report on investigation of the preparedness program. I am sure that the same Chief of Staff who testified before the Preparedness Investigating Subcommittee testified before the Committee on Foreign Relations.

Mr. SPARKMAN. The chairman of the Joint Chiefs and each individual chief, including General Shoup of the Marines.

Mr. ELLENDER. To show how the preparedness committee itself was in doubt, I should like to read the last paragraph of their report:

Although we have concluded that there will be a net military disadvantage to us if the treaty is ratified, we recognize the existence of other factors which, while not within the scope of this report, are pertinent to a final judgment on the treaty. Among these are matters related to international affairs, foreign policy, and relations with other countries. When these are taken into consideration the question becomes one of weighing relative risks, and our hearings provide ample evidence that the overall assessment of the relative merits and demerits of the treaty is a complex and difficult matter on which equally patriotic, informed, and dedicated persons may and do disagree. In the final analysis, then, each individual must reach his own judgment on the basis of personal philosophy, past experience, current knowledge, and the relative weight which he assigns to the various factors involved.

Mr. SPARKMAN. Yes, I believe that is a very fine and wise statement which the committee made.

Mr. ELLENDER. That is why I submit it. If the Preparedness Investigating Subcommittee had heard all of the witnesses who appeared before the Committee on Foreign Relations, had listened to them carefully and made the same analysis as did the Foreign Relations Committee in connection with that report, it might have come to the same conclusion as did the Committee on Foreign Relations.

Mr. SPARKMAN. The concluding part of the report indicates that their views were reached purely from a military standpoint.

Mr. ELLENDER. Exactly.

Mr. SPARKMAN. And yet in deciding the question from the military standpoint, it is important that the other

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that Russia has available or that she is likely to develop any time soon.

Mr. LAUSCHE. If and when that develops, will it not follow that we may change our attitude and may want to throw bombs of higher yield into the air than we have done heretofore?

Mr. SPARKMAN. The Senator will recall that there was a mass of testimony on that very score, and we were told that such tests could be carried on to a degree—perhaps not as high as 100 megatons. If I remember correctly, it was testified that we could develop bombs as high as 60 megatons.

Mr. LAUSCHE. Fifty or sixty.

Mr. SPARKMAN. It is my recollection that we could develop bombs as high as 60 megatons with the knowledge we have, and by making certain tests underground.

In that connection, let me quote something from General LeMay that was rather significant. This had to do with the antiballistic missile. General LeMay said:

I think both of us are going to develop antimissile systems.

This testimony was taken in executive session, and that part can be published, but there is a deletion.

This was not before our committee; it was before the Armed Services Committee. This testimony was given before the treaty was signed. This was testimony on military procurement authorizations, in February. I quote from it, leaving out the deletions, where confidential information was given:

I think both of us are going to develop antimissile systems and the first systems that will evolve are going to be very expensive and only defend a small segment of Russia, and the same thing applies to our antimissiles.

I firmly believe that we can keep ahead of them in our offensive systems so we can penetrate anything that they can come up with in an antiballistic missile system.

Let me put it this way, Senator. I think we are relatively in the same ball park as far as ability in antiballistic missile systems is concerned.

Mr. LAUSCHE. Madam President, there is still great difficulty for me in trying to reconcile what General LeMay said about developing an antiballistic missile system with what Dr. Brown said in stating that he did not believe it could be developed.

Mr. SPARKMAN. Dr. Brown takes the attitude that penetration capability is overriding. By the way, General LeMay indicates that, too, if the Senator will notice it.

Mr. LAUSCHE. Yes; I noticed that.

Mr. SPARKMAN. We could build anything to penetrate that they might develop.

Mr. THURMOND. Madam President, will the Senator yield?

Mr. SPARKMAN. I yield.

Mr. THURMOND. There is no question that the Russians have developed and have tested, in 1961 and 1962, and have learned information from those tests, is there?

Mr. SPARKMAN. That is correct.

Mr. THURMOND. The question has been raised as to whether we had learned

as much in testing as had the Soviets, because we tested more atmospheric shots. The United States has conducted no experiments comparable in complexity with those of the Soviet operations. A disturbing number of U.S. high-altitude effects experiments which were conducted were compromised either by considerations of unrelated, technical objectives of the test program, or by inadequate or faulty experiments, or operational inadequacies.

That is true, is it not?

Mr. SPARKMAN. The Russians carried on a great many more tests during that series than we did. We did not carry on an equal number of tests. They carried on high-altitude tests, and they carried on high-yield tests that we did not duplicate when we got around to testing. I admit that.

Mr. THURMOND. The United States would be unable to acquire data on high-altitude nuclear weapons effects unless it tests in the atmosphere, will it?

Mr. SPARKMAN. I believe it is only fair to say that the preponderance of evidence—practically all of it—before the committee was to the effect that for the purpose of developing an anti-ballistic missile—and I presume that is what the Senator is aiming at, and also the high-yield weapon—so far as developing an anti-ballistic-missile system was concerned, we had all the information that we needed so far as effects were concerned, and that what we needed was the work that could be carried on in laboratories relating to guidance, selectivity—if I may use that term, although I do not think that that term was used—for trying to ferret out real missiles instead of the decoys that might be sent out, but that we did not need to do any atmospheric testing in order to study the problems concerned with further development.

Mr. THURMOND. The Preparedness Subcommittee in one of its findings, No. 3, made this statement:

The United States will be unable to acquire data on high altitude nuclear weapons effects.

That means without atmospheric testing.

All seven members of the Preparedness Subcommittee agreed to the factual accuracy of the report, even the two members who will vote for ratification, the distinguished Senator from Massachusetts [Mr. SALTONSTALL] and the distinguished Senator from Missouri [Mr. SYMINGTON]. There is no question about that, is there?

Mr. SPARKMAN. I was not a member of the subcommittee. I would rather not be called upon to interpret what the subcommittee said.

Mr. THURMOND. This is on page 7 of the subcommittee's report.

Mr. SPARKMAN. In the testimony before our committee, certain limits were recognized; but, in spite of that fact we were told that research and development could be carried on, and that we did not need to do atmospheric testing in order to carry on effectively. I would like to recall this again.

Mr. McCone, who heads the Central Intelligence Agency, Secretary of Defense

McNamara, every member of the Joint Chiefs of Staff, and Dr. Brown—who, I think, will be admitted to be a man of unusual competence in this field—are aware of the same problems; yet they support the treaty and say we ought to ratify it.

Mr. THURMOND. But the fact remains that without testing in the atmosphere, the United States will be unable to acquire data on high altitude nuclear weapons effects. Is this not important because such data are necessary to the design of antiballistic missile systems, warheads, and radars?

Mr. SPARKMAN. We were told time and time again in the Foreign Relations Committee—and I believe we were told this many times when the Senator from South Carolina was present—that the design, development, and manufacture of warheads did not present a problem to us, because we already had them; that we had all the information we needed on them, not only with reference to design, but that we actually had them on hand. Such further study of the problems connected with that activity could be carried on in laboratories and with a limited amount of underground testing.

Mr. THURMOND. Does the Senator mean that we now have the type of design of warhead that we need to penetrate the defenses of the enemy?

Mr. SPARKMAN. In the committee report, at the bottom of page 14, and continuing on to page 15, we have this brief statement:

But in any case, after considering all of the testimony on this subject, the committee agrees with the Joint Chiefs of Staff that "in the antiballistic missile field, development of the U.S. system does not depend on atmospheric testing."

That categorical statement was made time after time before our committee. I think we have a right to rely upon it. I do not believe the Joint Chiefs of Staff would join in such a statement as that if they did not believe it to be true.

Mr. THURMOND. My question was not about the use of the ballistic missile. I was asking about the design of the warhead that is necessary to penetrate the Soviet missile defense. How do we know we have that design? How will we ever know we have it until such a warhead has been designed and has been tested in the atmosphere in which it will have to function when the time comes?

Mr. SPARKMAN. If I interpret the Senator's question correctly, it is the substance of the second question propounded by the Senator from Maine, which was the one I had started to take up when the Senator from South Carolina asked me to yield to him. So if he will permit me to discuss it, we can have a discussion about it later.

Mr. THURMOND. On the same point, about testing, someone has said that we have learned as much about testing as the Soviets, because we have tested more shots than have the Soviets. Is it not true that above values of 10 megatons, the Soviets conducted, in 1961 and 1962, more than twice the number of tests the United States ever conducted in its entire history of testing?

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The Secretary assured the committee—in his reply found on pages 968-969 of the printed hearings—that the amending procedures has no bearing on the recognition question. He also replied that the East German regime is a party to 24 international conventions, and that the United States and West Germany are both parties to 11 of these. I would note that all 11 of these treaties have been in effect for more than 10 years and do not imply recognition by us of East Germany. These agreements, together with East Germany's bilateral undertakings, are listed starting on page 969 of the printed hearings.

It should also be noted that East Germany has already acceded to the treaty in Moscow. The process of its accession did not and will not require any official action by the United States even hinting at recognition. The Soviet Union sent a note advising the United States of the accession to the treaty in Moscow of East Germany and a number of other countries. The United States responded by notifying the Soviet Government that since it did not recognize the East German regime as a government, the United States could only take note of the fact that the authorities in that country had signed on in Moscow and could not accept notice of East Germany's signature. Thus, the recognition question remains unaffected by the treaty.

CONCLUSION

Mr. President, I have not resolved any of the questions raised by the senior Senator from Maine for I do not believe they can at this time be resolved by facts but only by well-based opinions. The answers I have given here were selected from many answers that could have been chosen, but having heard most of the testimony and studied the record as best I could, these are the answers that are satisfactory to me and will prove to be correct.

I do not deny there are risks in this treaty. As the distinguished chairman of the Foreign Relations Committee said in opening this debate:

There are, to be sure, risks in such an approach. There is an element of trust in it, and we can be betrayed. But human life is fraught with risks and the behavior of the same man is not the avoidance of all possible danger, but the weighing of greater against lesser risks and of risks against opportunities.

There are risks in this nuclear test ban treaty, but they are lesser rather than greater risks and the political opportunities outweigh the military risks. As George Kennan has written: "Whoever is not prepared to make sacrifices and to accept risks in the military field should not lay claim to any serious desire to see world problems settled by any means short of war."

Mr. President, I must say to the Senator from Maine that our national safety and security are already in jeopardy in a world that permits unlimited testing. Ratification of this limited test ban treaty in itself will not make that situation more or less hazardous. If the treaty works, however, it may over a period of time form the basis for further agreements that may bring us peacefully away from this point of jeopardy. If the treaty does not work, then a future

nuclear war will in all probability solve all our problems.

Mr. LAUSCHE. Madam President, will the Senator yield?

Mr. SPARKMAN. I yield.

Mr. LAUSCHE. I should like to go back into the first chapter of the Senator's discussion.

Mr. SPARKMAN. Yes.

Mr. LAUSCHE. Is it the understanding of the Senator from Alabama that we have reliable knowledge concerning the tests made by Red Russia with regard to the blackout impact, the weapons effects impact, and the technological knowledge possessed by Russia in all fields? I refer especially to the Senator's suggestion that the transcript of Mr. McCone's testimony be read.

Mr. SPARKMAN. I understand.

Mr. LAUSCHE. To repeat my question, is it the understanding of the Senator from Alabama that we have reliable knowledge concerning first, the status of the development of antiballistic missiles in Russia; second, the blackout impact by high yield bombs; third, the effects upon weapons of the high yield bomb explosions; and fourth, the technical knowledge acquired?

Mr. SPARKMAN. Let me call the attention of the Senator to the quotation I gave from Dr. Harold Brown's testimony. We will take high altitude blackout first. He said:

With respect to high altitude blackout, the Chiefs say the Soviets have some data that we do not have. I would say yes, and we have some data they may not have.

I do not think it is anywhere plain that we necessarily know everything the Russians learned from those tests; but, on the other hand, I think sometimes we are prone to emphasize what they may have learned from them. There was testimony on high altitude blackout by Mr. McCone. I recommended that that testimony be read. I think it is quite reassuring.

So far as weapons effects are concerned, the Joint Chiefs of Staff stated that the U.S.S.R. is ahead of the United States in weapons effects knowledge derived from high yield nuclear explosions. But Dr. Brown said—and this indicates the difference of opinion which arises on many of these questions:

My interpretation of all the data indicates that although they have done more high yield tests, they were not effects tests.

So I think we must admit that it is not known to an absolute certainty.

Mr. LAUSCHE. To me it seems that we do not have the knowledge, and because we do not have the knowledge we draw the inference that they have not made achievements in these fields. The impression of the Joint Chiefs of Staff, as the Senator from Alabama has stated, is that they have excelled us in certain fields. I know Dr. Brown has taken a different position.

Mr. SPARKMAN. Yes.

Mr. LAUSCHE. I put the question to him: "You do not believe that they developed an antiballistic missile?" and he said, "Yes, that is my belief." I asked him, "Why do you believe that?" His answer was, "Because I do not think it can be done."

Mr. SPARKMAN. If I remember correctly, Dr. Brown's attitude with respect to the antiballistic missile was that the best defense was a penetration of the other side, rather than trying to knock missiles out of the sky after they got over our country.

Mr. LAUSCHE. I was amazed by his idea that the development of an antiballistic missile was beyond the realm of achievement, but that the research and development should go on because of the particular good that comes from incidental discoveries that are made.

I asked him, "Why do you think that surrounding Leningrad in Red Russia is installed a system of antiballistic weapons?"

His answer was that he thought somebody had sold a bill of goods to Khrushchev.

I hope so, but Khrushchev is not sold a bill of goods with that ease.

Still, I do not believe that the question which I put, "Do we have reliable knowledge on these items?" that can be answered in the affirmative.

Mr. SPARKMAN. I agree with the Senator. Let us consider the high-yield weapons, for example. This is a point everyone should keep in mind. At the time when we were testing, and the whole world was free to test, there was no ban of any kind whatsoever. When we were testing, the military authorities, those on the Atomic Energy Commission, and those in charge of determining what course we should take, including our scientists, all deliberately reached the decision that we did not want to test for high-yield weapons, because we did not want to develop high-yield weapons; that we preferred numerous relatively small-yield weapons. I hesitate to call them small-yield weapons, because they have tremendous impact, but, nevertheless, relatively speaking, they are weapons of small yield. It was felt that such weapons in larger numbers were much better for our purposes than were high-yield weapons.

So it is not a question of the Russians having stepped out ahead of us with their testing; the fact is that we did not want to test and did not test when we had the opportunity to do so. We decided it was something we did not want, and did not test.

Mr. LAUSCHE. May I put a further question?

Mr. SPARKMAN. Yes.

Mr. LAUSCHE. With respect to the 100-megaton bomb, with the added weight that must be thrown into the air, would the Senator from Alabama say that, because of the propulsion devices developed by Red Russia, they are in a better position to throw a heavier bomb into the air than we are?

Mr. SPARKMAN. I believe it is generally admitted that Red Russia is ahead of us at the moment in that respect, but that situation is only temporary. I had the pleasure of seeing something being developed for us recently, in my own home town, that I was told would transcend anything that the Russians have yet developed. I think it is well-known that the propulsion we are getting ready to utilize will go far beyond anything

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Mr. SPARKMAN. I understand.

Mr. LAUSCHE. To repeat my question, is it the understanding of the Senator from Alabama that we have reliable knowledge concerning first, the status of the development of antiballistic missiles in Russia; second, the blackout impact by high yield bombs; third, the effects upon weapons of the high yield bomb explosions; and fourth, the technical knowledge acquired?

Mr. SPARKMAN. Let me call the attention of the Senator to the quotation I gave from Dr. Harold Brown's testimony. We will take high altitude blackout first. He said:

With respect to high altitude blackout, the Chiefs say the Soviets have some data that we do not have. I would say yes, and we have some data they may not have.

I do not think it is anywhere plain that we necessarily know everything the Russians learned from those tests; but, on the other hand, I think sometimes we are prone to emphasize what they may have learned from them. There was testimony on high altitude blackout by Mr. McCone. I recommended that that testimony be read. I think it is quite reassuring.

So far as weapons effects are concerned, the Joint Chiefs of Staff stated that the U.S.S.R. is ahead of the United States in weapons effects knowledge derived from high yield nuclear explosions. But Dr. Brown said—and this indicates the difference of opinion which arises on many of these questions:

My interpretation of all the data indicates that although they have done more high yield tests, they were not effects tests.

So I think we must admit that it is not known to an absolute certainty.

Mr. LAUSCHE. To me it seems that we do not have the knowledge, and because we do not have the knowledge we draw the inference that they have not made achievements in these fields. The impression of the Joint Chiefs of Staff, as the Senator from Alabama has stated, is that they have excelled us in certain fields. I know Dr. Brown has taken a different position.

Mr. SPARKMAN. Yes.

Mr. LAUSCHE. I put the question to him: "You do not believe that they developed an antiballistic missile?" and he said, "Yes, that is my belief." I asked him, "Why do you believe that?" His answer was, "Because I do not think it can be done."

Mr. SPARKMAN. If I remember correctly, Dr. Brown's attitude with respect to the antiballistic missile was that the best defense was a penetration of the other side, rather than trying to knock missiles out of the sky after they got over our country.

Mr. LAUSCHE. I was amazed by his idea that the development of an antiballistic missile was beyond the realm of achievement, but that the research and development should go on because of the particular good that comes from incidental discoveries that are made.

I asked him, "Why do you think that surrounding Leningrad in Red Russia is installed a system of antiballistic weapons?"

His answer was that he thought somebody had sold a bill of goods to Khrushchev.

I hope so, but Khrushchev is not sold a bill of goods with that ease.

Still, I do not believe that the question which I put, "Do we have reliable knowledge on these items?" that can be answered in the affirmative.

Mr. SPARKMAN. I agree with the Senator. Let us consider the high-yield weapons, for example. This is a point everyone should keep in mind. At the time when we were testing, and the whole world was free to test, there was no ban of any kind whatsoever. When we were testing, the military authorities, those on the Atomic Energy Commission, and those in charge of determining what course we should take, including our scientists, all deliberately reached the decision that we did not want to test for high-yield weapons, because we did not want to develop high-yield weapons; that we preferred numerous relatively small-yield weapons. I hesitate to call them small-yield weapons, because they have tremendous impact, but, nevertheless, relatively speaking, they are weapons of small yield. It was felt that such weapons in larger numbers were much better for our purposes than were high-yield weapons.

So it is not a question of the Russians having stepped out ahead of us with their testing; the fact is that we did not want to test and did not test when we had the opportunity to do so. We decided it was something we did not want, and did not test.

Mr. LAUSCHE. May I put a further question?

Mr. SPARKMAN. Yes.

Mr. LAUSCHE. With respect to the 100-megaton bomb, with the added weight that must be thrown into the air, would the Senator from Alabama say that, because of the propulsion devices developed by Red Russia, they are in a better position to throw a heavier bomb into the air than we are?

Mr. SPARKMAN. I believe it is generally admitted that Red Russia is ahead of us at the moment in that respect, but that situation is only temporary. I had the pleasure of seeing something being developed for us recently, in my own home town, that I was told would transcend anything that the Russians have yet developed. I think it is well-known that the propulsion we are getting ready to utilize will go far beyond anything

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that Russia has available or that she is likely to develop any time soon.

Mr. LAUSCHE. If and when that develops, will it not follow that we may change our attitude and may want to throw bombs of higher yield into the air than we have done heretofore?

Mr. SPARKMAN. The Senator will recall that there was a mass of testimony on that very score, and we were told that such tests could be carried on to a degree—perhaps not as high as 100 megatons. If I remember correctly, it was testified that we could develop bombs as high as 60 megatons.

Mr. LAUSCHE. Fifty or sixty.

Mr. SPARKMAN. It is my recollection that we could develop bombs as high as 60 megatons with the knowledge we have, and by making certain tests underground.

In that connection, let me quote something from General LeMay that was rather significant. This had to do with the antiballistic missile. General LeMay said:

I think both of us are going to develop antimissile systems.

This testimony was taken in executive session, and that part can be published, but there is a deletion.

This was not before our committee; it was before the Armed Services Committee. This testimony was given before the treaty was signed. This was testimony on military procurement authorizations, in February. I quote from it, leaving out the deletions, where confidential information was given:

I think both of us are going to develop antimissile systems and the first systems that will evolve are going to be very expensive and only defend a small segment of Russia, and the same thing applies to our antimissiles.

I firmly believe that we can keep ahead of them in our offensive systems so we can penetrate anything that they can come up with in an antiballistic missile system.

Let me put it this way, Senator. I think we are relatively in the same ball park as far as ability in antiballistic missile systems is concerned.

Mr. LAUSCHE. Madam President, there is still great difficulty for me in trying to reconcile what General LeMay said about developing an antiballistic missile system with what Dr. Brown said in stating that he did not believe it could be developed.

Mr. SPARKMAN. Dr. Brown takes the attitude that penetration capability is overriding. By the way, General LeMay indicates that, too, if the Senator will notice it.

Mr. LAUSCHE. Yes; I noticed that. Mr. SPARKMAN. We could build anything to penetrate that they might develop.

Mr. THURMOND. Madam President, will the Senator yield?

Mr. SPARKMAN. I yield.

Mr. THURMOND. There is no question that the Russians have developed and have tested, in 1961 and 1962, and have learned information from those tests, is there?

Mr. SPARKMAN. That is correct.

Mr. THURMOND. The question has been raised as to whether we had learned

as much in testing as had the Soviets, because we tested more atmospheric shots. The United States has conducted no experiments comparable in complexity with those of the Soviet operations. A disturbing number of U.S. high-altitude effects experiments which were conducted were compromised either by considerations of unrelated, technical objectives of the test program, or by inadequate or faulty experiments, or operational inadequacies.

That is true, is it not?

Mr. SPARKMAN. The Russians carried on a great many more tests during that series than we did. We did not carry on an equal number of tests. They carried on high-altitude tests, and they carried on high-yield tests that we did not duplicate when we got around to testing. I admit that.

Mr. THURMOND. The United States would be unable to acquire data on high-altitude nuclear weapons effects unless it tests in the atmosphere, will it?

Mr. SPARKMAN. I believe it is only fair to say that the preponderance of evidence—practically all of it—before the committee was to the effect that for the purpose of developing an anti-ballistic-missile missile—and I presume that is what the Senator is aiming at, and also the high-yield weapon—so far as developing an anti-ballistic-missile system was concerned, we had all the information that we needed so far as effects were concerned, and that what we needed was the work that could be carried on in laboratories relating to guidance, selectivity—if I may use that term, although I do not think that that term was used—for trying to ferret out real missiles instead of the decoys that might be sent out, but that we did not need to do any atmospheric testing in order to study the problems concerned with further development.

Mr. THURMOND. The Preparedness Subcommittee in one of its findings, No. 3, made this statement:

The United States will be unable to acquire data on high altitude nuclear weapons effects.

That means without atmospheric testing.

All seven members of the Preparedness Subcommittee agreed to the factual accuracy of the report, even the two members who will vote for ratification, the distinguished Senator from Massachusetts [Mr. SALTONSTALL] and the distinguished Senator from Missouri [Mr. SYMINGTON]. There is no question about that, is there?

Mr. SPARKMAN. I was not a member of the subcommittee. I would rather not be called upon to interpret what the subcommittee said.

Mr. THURMOND. This is on page 7 of the subcommittee's report.

Mr. SPARKMAN. In the testimony before our committee, certain limits were recognized; but, in spite of that fact we were told that research and development could be carried on, and that we did not need to do atmospheric testing in order to carry on effectively. I would like to recall this again.

Mr. McCone, who heads the Central Intelligence Agency, Secretary of Defense

McNamara, every member of the Joint Chiefs of Staff, and Dr. Brown—who, I think, will be admitted to be a man of unusual competence in this field—are aware of the same problems; yet they support the treaty and say we ought to ratify it.

Mr. THURMOND. But the fact remains that without testing in the atmosphere, the United States will be unable to acquire data on high altitude nuclear weapons effects. Is this not important because such data are necessary to the design of antiballistic missile systems, warheads, and radars?

Mr. SPARKMAN. We were told time and time again in the Foreign Relations Committee—and I believe we were told this many times when the Senator from South Carolina was present—that the design, development, and manufacture of warheads did not present a problem to us, because we already had them; that we had all the information we needed on them, not only with reference to design, but that we actually had them on hand. Such further study of the problems connected with that activity could be carried on in laboratories and with a limited amount of underground testing.

Mr. THURMOND. Does the Senator mean that we now have the type of design of warhead that we need to penetrate the defenses of the enemy?

Mr. SPARKMAN. In the committee report, at the bottom of page 14, and continuing on to page 15, we have this brief statement:

But in any case, after considering all of the testimony on this subject, the committee agrees with the Joint Chiefs of Staff that "in the antiballistic missile field, development of the U.S. system does not depend on atmospheric testing."

That categorical statement was made time after time before our committee. I think we have a right to rely upon it. I do not believe the Joint Chiefs of Staff would join in such a statement as that if they did not believe it to be true.

Mr. THURMOND. My question was not about the use of the ballistic missile. I was asking about the design of the warhead that is necessary to penetrate the Soviet missile defense. How do we know we have that design? How will we ever know we have it until such a warhead has been designed and has been tested in the atmosphere in which it will have to function when the time comes?

Mr. SPARKMAN. If I interpret the Senator's question correctly, it is the substance of the second question propounded by the Senator from Maine, which was the one I had started to take up when the Senator from South Carolina asked me to yield to him. So if he will permit me to discuss it, we can have a discussion about it later.

Mr. THURMOND. On the same point, about testing, someone has said that we have learned as much about testing as the Soviets, because we have tested more shots than have the Soviets. Is it not true that above values of 10 megatons, the Soviets conducted, in 1961 and 1962, more than twice the number of tests the United States ever conducted in its entire history of testing?

ous nuclear weapons laboratory research and development; the conduct of effective underground testing of nuclear weapons; the extension of the depth and breadth of the U.S. detection and identification system directed at clandestine experiments; and the real readiness for effective testing in the atmosphere should the treaty be suddenly abrogated; that all of these things are completely feasible both from a purely technical point of view and from the point of view of the management of the U.S. scientific effort.

To the extent that these things were possible under the terms of the 1958 moratorium, the Eisenhower administration found it quite feasible to carry them out. The weapons development program during that period turned to extensive theoretical research involving the wider use of modern high-speed computers than had ever been a part of the program before.

This resulted in, if anything, an improvement in the effectiveness of the nuclear weapons research effort. The laboratories remained healthy, and far from shrivelling and losing substance, they actually grew both in the quantity and the quality of the work done during the period of the moratorium than afterward.

There is no reason why this performance should not be repeated in the present context which is less restraining because of the continuing of underground testing.

In concluding my testimony I want to return to some general comments. Undoubtedly there are risks to our security involved in the ratification of the proposed treaty. But these risks, as other witnesses and I have stated, can be minimized, if we do not fall into a state of euphoria, using Secretary McNamara's word.

Eleventh. Will we be restrained from ever determining feasibility, developing and deploying any defense whatever against ballistic missile attack?

Answer: To this question Secretary McNamara answered, during the hearings:

There has been some disagreement, I think, as you know, in the Department, as to whether we should or should not deploy antiballistic missile systems.

The Chiefs, themselves, have been uncertain about that. And I know that in testimony before the committees that you have been a member of, you have heard both sides of the argument. And I think the point to emphasize at the moment is that I believe none of us who state that the system we presently have developed—that is to say the Nike Zeus—nor the system which is presently under development—the Nike X—is an effective system in the sense that they can be guaranteed to protect our metropolitan centers against substantial damage from a potential Soviet attack. We haven't reached the end of the developmental process by any means.

And it is to carry on that process that we have asked the Congress to appropriate \$450 million. I am optimistic that we will continue to make progress. Whether the progress will be enough to warrant the huge expenditures associated with such deployment, I don't know. We estimate very roughly that to protect perhaps 20-odd metropolitan centers, containing some 35 percent of the population, perhaps, would cost on the order of \$14 billion.

As to the effects of the treaty on ABM development, the Joint Chiefs, as well as others stated:

In the antiballistic missile field, development of the U.S. system does not depend on atmospheric testing.

Twelfth. Will this treaty permit the Soviet Union to achieve equality in the

low yield tactical weapons where it is generally acknowledged that we have an advantage and yet, preclude us from ever achieving equality in the high yield weapon where the Soviet Union is unquestionably superior?

Answer. As I read an answer to an earlier question, it is clear that we have not in the past, and apparently do not have at present, a military requirement for a high yield weapon. As to the activity of the Soviets in the low yield tactical weapons, Secretary McNamara put it well, I believe, when he stated:

There is no question in my mind but that without a test ban the Soviet would be able to advance more rapidly and at a lesser cost in the field of tactical weapon technology than they will be under the test ban.

In other words, treaty or no treaty, the Soviets, if they desired, could cut our superiority in the low yield field—and in all probability, maintain their superiority in the very, very high yield area because it is an area in which we see no military advantage.

I would also suggest reading Mr. McCone's testimony on this point.

Thirteenth. To what extent can we satisfy, through underground testing, the military and scientific requirements which were to have been investigated by atmospheric tests planned for next year?

Answer. Concerning this question Dr. Harold Brown testified before the joint committees:

I cannot describe in individual detail the tests in open session, but I can tell you what kinds they were * * * the tests which are planned, if atmospheric testing is resumed, and for which preparations are being made, include tests on the effects of surface shots on hard sites.

They are large tests, hundreds of kilotons, and, of course, would be easily detectable.

They include tests on the effects of nuclear explosions in the atmosphere on blackout, and tests on the effects of nuclear explosions on reentry vehicles.

Some of this information can be obtained by underground tests but much of it cannot and the information can be gotten better from atmospheric tests. If the atmospheric tests are not conducted, we are going to go ahead and design our systems so that these uncertainties, which could be reduced with atmospheric tests, are compensated for by the design of the systems, and that is what we would have planned to do anyway.

That way we will have to compensate for slightly greater uncertainties. But there are some uncertainties that we cannot compensate for no matter how many atmospheric nuclear tests were done.

Fourteenth. What is the human tolerance for radioactivity and what is the truth about the danger of atmospheric contamination, even at previous rates of testing, in causing genetic damage and leukemia to the living and yet unborn?

Answer. There is, of course, no answer here; only estimates which vary and the conclusions which stem from them. As Dr. Seaborg testified:

I do not think there is a scientist who could tell you (how much contamination the atmosphere can take before we will reach a point of no return) with any authority, and I, although I said earlier that I felt that the fallout up until now had not led to a serious situation, I do feel that continued testing would lead to an amount of fallout that we certainly should avoid, and it is a statistical

matter, of course, and that the fallout that has been—that we have up until now—has certainly led to some adverse health effect, and presumably some genetic effects.

So it is just a matter of a balance of these rather small numbers of people affected against the necessity for testing in order to maintain our defenses strong.

Fifteenth. What will be the effect of ratification upon our Plowshare program—a project designed to deepen harbors, dig tunnels and canals, or otherwise cause beneficial changes to the topography through controlled and contained nuclear explosions?

Answers: Dr. Seaborg, in his testimony before the committees, replied as follows on the restraints imposed on the Plowshare program if the treaty is ratified:

Specifically, we feel that we could develop the devices themselves which clearly can be perfected by underground explosions, completely contained explosions, and we can also develop a good deal of the excavation technology through properly devised experiments in which these explosives were used for earthmoving purposes.

Also, some of the other experiments having to do with the development of oil resources and water resources and so forth can be carried out in completely contained underground explosions.

President Kennedy in his September 10, 1963, letter to Senators MANSFIELD and DIRKSEN, wrote:

The United States will diligently pursue its programs for the further development of nuclear explosives for peaceful purposes by underground tests within the terms of the treaty, and as and when such developments make possible constructive uses of atmospheric nuclear explosions for peaceful purposes, the United States will seek international agreement under the treaty to permit such explosions.

Sixteenth. Will the participation of East Germany in this treaty constitute even so much as a tacit, implied, or suggestive recognition of that Communist regime, as a sovereign national entity?

Answer: First, both the President and the Secretary of State have publicly stated on numerous occasions that this Government has no intention of recognizing the East German regime. Secretary Rusk also testified to this effect before the committees.

The Secretary's statement is amply fortified by an opinion of the legal adviser found on page 15 of the printed hearings. The committee report, discussing this matter, states that this opinion, together with these public statements of high officials offers reassurance "that the recognition question will not be affected * * * by the treaty. This, indeed, is the committee's understanding."

Thus, the understanding is clearly spelled out in the committee report. In addition, a letter from Senator FULBRIGHT to the Secretary of State, found on page 968 of the printed hearings asks, among other things, whether a legal question affecting recognition arises from the amending procedure of the treaty and whether the United States and West Germany are parties to any international conventions in which East Germany is also a party.

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ground test within the meaning of article 1, section 1, subsection (a) of the treaty?

Answer. Secretary Rusk testified, and it was made a part of the Committee on Foreign Relations report that "obviously this treaty permits a clear underground test where the explosion is underground, where the testing apparatus is based on that phenomenon, and I would think that we would not think it applied to a surface explosion which was christened by a few shovelfuls of dirt."

Secretary McNamara stated at the hearings in answer to this exact question that:

I think that it is clear the intent of the parties is to limit tests to the underground environment. And I think that by definition it would be the intent of the experiment to contain the force of the test under the surface * * * and furthermore, I am satisfied that in the event of a test of the type we have discussed—a weapon buried at a very low depth, as I say, covered by a layer of dust—is detonated under the guise of an underground test, we would probably be aware of that through our detection system, and I, for one, would consider it contrary to the intent of the treaty.

Focusing again on this same point, Dr. Harold Brown made the definition more precise when he stated:

I would view a test that put most of its energy into the atmosphere as an atmospheric test and it would be detected as such.

Sixth. Do we possess the capability to detect all nuclear detonations occurring in the three environments prohibited by the treaty?

Answer. The most reassuring answers to this question are to be found in the executive session testimony of Mr. McCone and Dr. Doyle Northrup of the Air Force Technical Applications Center, the agency specifically charged with our Government's monitoring program. I doubt if any responsible official would claim we could detect all nuclear explosions in the three prohibited environments.

—Dr. Brown testified:

Underwater explosions of only a few pounds of TNT equivalent can often be detected with hydrophones thousands of miles away * * *. Detections of tests in shallow coastal waters and inland lakes could be done by seismic means, but small tests in inland waters could go unidentified—though they would be seismically detected, because underwater tests couple very well into the earth and produce signals of enhanced coupling which is the opposite of decoupling.

Our detection capacity for tests in deep space is at present rather small in terms of what we actually have deployed.

However, an effective ground-based detection system could be installed rapidly because the basic instrument development work has been largely done, that is, the equipment exists.

With the cooperation of the Western and neutral nations, a worldwide group-based system could be installed with the capability of detecting an unshielded 10-kiloton test at 1 million kilometers, and an unshielded 10-megaton test could be detected at 30 million kilometers, which I think Secretary McNamara mentioned is about 60 times the distance to the moon.

An earth satellite system for detection of deep space nuclear explosions is presently under development (first launch scheduled for September or October this year) and could be made fully operational within 3 years.

In the lower atmosphere, I can summarize the situation quite simply by saying small tests on or above the surface in the Soviet Union are likely to be detected if their yields are in the kiloton range.

Secretary McNamara, in discussing atmospheric tests admitted:

It is more difficult to detect and identify tests in certain bands of the atmosphere, particularly in this band I am discussing—say roughly from 6 to 20 miles—than it is to detect tests in the low atmosphere.

Dr. Brown amplified this, stating:

In the band from 6 to about 20 miles, the electromagnetic signal is suppressed somewhat, and therefore you do not have as many techniques, and therefore (detection) is somewhat more difficult. Debris sampling is also harder to do, but it is not impossible. So that even for tests at say 10 or 15 miles there is some chance of being able to collect debris.

At a later point in the hearing, speaking of this 6- to 20-mile band, Dr. Brown stated that with an explosion of a kiloton or more "an acoustic signal will probably be detectable from any test over the U.S.S.R."

Above the 20 mile atmospheric limit, Dr. Brown stated that detection was easier since "you start getting back a different kind of electromagnetic signal. You start getting effects on the ionosphere which cause phase shift and radio signals which you can send through that region. And, also, the higher it gets the easier it is to see visually, as a matter of fact."

I believe the record is clear that neither Secretary McNamara nor Dr. Brown tried to indicate that all nuclear explosions could be detected—in fact, I believe they went out of their way and rightly so to point out the detection risks. I repeat, however, that anyone wanting sincerely to consider a full answer to this question must first read the testimony of Mr. McCone and Dr. Northrup—testimony which I consider reassuring on this point.

Seventh. Can any significant advances in nuclear technology be achieved by clandestine testing in those three environments at yields which may possibly be below our ability to detect?

Answer: As the Committee on Foreign Relations' report pointed out:

The complex subject of clandestine testing * * * was exhaustively discussed in the prepared statements of Secretary of Defense McNamara and Dr. Brown, found respectively on page 97 and 528 of the printed hearings.

To this question posed by Senator SMITH, I offer this comment by the Joint Chiefs:

The dangers of detection and the cost and difficulty of testing in outer space would tend to impose severe restrictions upon such clandestine testing. Other clandestine tests in the atmosphere or underwater, depending upon their size, would involve a fairly high probability of detection by our conventional intelligence or our atomic energy detection system. Moreover, the Joint Chiefs of Staff consider the resulting progress which the Soviets might make clandestinely to be a relatively minor factor in relation to the overall present and probable balance of military strength if adequate safeguards are maintained.

Eighth. Will we be able to differentiate between a shallow underground ex-

plosion and an atmospheric burst detonated close to the surface of the earth?

Answer: Using the above mentioned definitions as to what constitutes an underground test, it is apparent that neither Secretary McNamara nor Dr. Brown would be willing to accept a shallow underground test—at least one which releases energy into the atmosphere—as anything but an atmospheric test—thus the need to differentiate between the two appears unnecessary. I have already quoted Dr. Brown's testimony at one point on our ability to detect such surface tests. I will quote from a portion of his prepared statement on this point where he stated:

A third type of clandestine tests which might be tried, is surface bursts or very near surface bursts. These are very detectable.

Ninth. Can we, in fact, maintain an adequate readiness to test in those prohibited environments in the event the treaty should suddenly be abrogated?

Answer: Questioned on this point during the Committee on Foreign Relations hearings, Dr. Seaborg testified:

Our plans are approximately as follows: The time at which we would be able to make our tests, of course, depends on the type of tests, and I mentioned the three types in my testimony, the proof tests, and the developmental tests and the effects tests.

We would propose to maintain a readiness that would make it possible for us, if we desired, to make a proof test in a period of perhaps a month and to make a development test in a period as short as perhaps 3 months, and an effects test in a period of an order of 3 to 6 months.

Now, this would be a readiness posture, and * * * these are the times that would be required or that we could have the capability of resuming tests of those various types if we desired.

It isn't at all clear that we would necessarily want to test that soon. After having tested some 18 years, and having made hundreds of tests, a matter of a few months one way or the other isn't that critical.

I would only remind Senator SMITH that as Chairman of the Atomic Energy Commission, it would be Dr. Seaborg's responsibility to supervise the maintenance of our testing capability.

Tenth: Will our scientific laboratories and the interest of our scientists deteriorate under a treaty which permits only underground testing?

Answer: Again in answer to almost an identical question at the hearings, Dr. Seaborg frankly testified:

I think that there will be a problem in keeping the laboratories going strong and keeping a sufficient number of scientists together but this will be helped under this test ban treaty because of the continuance of underground testing * * *. We didn't lose very many (scientists) before (during the moratorium) and at that time we were not carrying on underground testing.

Asked if the AEC could keep topflight scientists with the test ban treaty in effect, Dr. Seaborg replied:

Yes, I am confident of that.

Dr. George Kistiakowsky, former Chief Science Advisor to President Eisenhower in meeting this question stated:

I would like to say, however, that if the things particularly high-lighted by Senator JACKSON, namely the maintenance of a vigor-

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David J. Winton, chairman, Winton Lumber Co.

Raymond H. Wittecoff, president, Transurban Investment Corp.

Successful businessmen—and the industrial leaders listed here are certainly that—are not given to wishful thinking.

Their call for a test ban treaty is based on the realities of our nuclear world:

1. Continued nuclear testing holds far greater risks for this country than a test ban.
2. Continued testing would increase the tempo of the arms race and encourage the spread of nuclear arms to nonnuclear powers. This would vastly increase the likelihood of war.

3. The test ban treaty will not threaten our national security. Under the treaty's terms we can resume testing on 3 months' notice if, for any reason, we feel our security is threatened.

4. The treaty will protect us and our children from exposure to further and perhaps lethal radioactive fallout.

5. The treaty will create a better climate on both sides for a slow-up in the arms race. It is a first and necessary step toward a rational, peaceful ordering of our world.

If these realities make good sense to you, say so. Say it to your Senators. Say it by letter, say it by wire.

Say it now.

While they're making up their minds.

Citizens Committee for a Nuclear Test Ban, 130 East 58th Street, New York, N.Y., James J. Wadsworth, chairman.

ONE HUNDRED AND THREE LEADERS IN SCIENCE, ART, MEDICINE, MUSIC, ARCHITECTURE, THEATER, MOTION PICTURES, ELEVEN OF THEM NOBEL LAUREATES, SUPPORT NUCLEAR TEST BAN

One hundred and three distinguished leaders in literature, science, art, medicine, architecture, music, theater, motion pictures, eleven of them Nobel Laureates, today expressed support of the nuclear test ban treaty as "a significant first step in arresting the present unlimited competition in nuclear arms."

"Failure to ratify the treaty reduces almost to zero whatever chances may now exist for preventing the spread of nuclear weapons to country after country, with a corresponding danger of a chain reaction effect as the nuclear fuse starts to ignite."

Mark Van Doren, distinguished American poet, author, critic, and teacher, in behalf of the signatories, made the statement public.

In addition to the 11 Nobel Laureates in physics, chemistry, medicine and literature, the signatories included 39 writers, 16 painters and sculptors, 11 musicians, 12 leaders in the theater and motion pictures, 10 architects, and 4 other scientists.

Nobel Laureates who signed the communication were:

Prof. Owen Chamberlain, 1959 Nobel Laureate, physics.

Dr. James Franck, 1925 Nobel Laureate, physics.

Dr. Arthur Kornberg, 1959 Nobel Laureate, medicine and physiology.

Dr. Fritz Lipmann, 1953 Nobel Laureate, medicine and physiology.

Dr. Hermann J. Muller, 1946 Nobel Laureate, medicine and physiology.

Dr. Emilio Segre, 1959 Nobel Laureate, physics (with Dr. Chamberlain).

John Steinbeck, 1962 Nobel Laureate, literature.

Dr. Edward L. Tatum, 1958 Nobel Laureate, medicine and physiology.

Dr. Harold C. Urey, 1934 Nobel Laureate, chemistry.

Dr. Selman A. Waksman, 1952 Nobel Laureate, medicine and physiology.

Dr. James D. Watson, 1962 Nobel Laureate, medicine and physiology.

Signatories to the statement are:

Ivan LeLorraine Albright, painter.

Steve Allen, radio and television.

Karen Arden, painter.

Claudio Arrau, pianist.

Boris Artzybasheff, painter.

Tallulah Bankhead, actress.

Margaret Culkin Banning, novelist.

S. N. Behrman, playwright.

Pietro Belluschi, FAIA, architect.

Leonard Bernstein, conductor, New York Philharmonic Orchestra.

Dr. Kenneth E. Boulding, economist and social scientist.

Catherine Drinker Bowen, novelist.

Ray Bradbury, novelist and short-story writer.

Alexander Brailowsky, pianist.

Marcel Breuer, FAIA, architect.

Alexander Brook, painter.

Eugene Burdick, novelist.

Truman Capote, novelist and short-story writer.

Prof. Owen Chamberlain, 1959 Nobel laureate, physics.

Paddy Chayefsky, playwright.

Aaron Copland, composer.

Malcolm Cowley, president, National Institute of Arts and Letters.

Cheryl Crawford, producer.

Russel Crouse, playwright.

Charles C. Cunningham, director, Wadsworth Atheneum.

Marcia Davenport, writer.

Adolph Dehn, painter.

Rene d'Harnoncourt, director, Museum of Modern Art.

Lamar Dodd, painter.

Helen Gahagan Douglas, actress.

Melvyn Douglas, actor.

Samuel G. Engel, producer.

Ernest Flene, painter.

Dr. James Franck, 1925 Nobel laureate, physics.

Maxwell Geismar, writer.

Perdval Goodman, FAIA, architect.

Walter Gropius, FAIA, architect.

Victor O. Gruen, architect.

Judy Holliday, actress.

Edward Hopper, painter.

Fannie Hurst, novelist.

John Huston, director.

James Jones, novelist.

Ella Kazan, director.

Alfred Kazin, writer.

William Melvin Kelley, novelist.

Dr. Arthur Kornberg, 1959 Nobel laureate, medicine and physiology.

Olga (Mrs. Serge) Koussevitzky.

Stanley J. Kunitz, poet.

Dr. Fritz Lipmann, 1953 Nobel laureate, medicine and physiology.

Richard Lippold, sculptor.

Archibald MacLeish, poet and playwright.

Carson McCullers, novelist.

Frederic March, actor.

Lenore Marshall, poet and novelist.

Ludwig Mies van der Rohe, architect.

Arthur Miller, playwright.

Pierre Monteux, conductor.

Marianne Moore, poet.

Robert Motherwell, painter.

Dr. Hermann J. Muller, 1946 Nobel laureate, medicine and physiology.

Lewis Mumford, writer.

Robert Nathan, novelist.

S. J. Perelman, playwright.

Hobson Pittman, painter.

Ralph Pomerance, architect.

Samson Raphaelson, playwright.

Dr. Fritz Reiner, conductor, Chicago Symphony Orchestra.

Elmer Rice, playwright.

Dr. Leo Rosten, short story writer.

Robert Ryan, actor.

Maurice Samuel, writer.

Carl Sandburg, poet.

Dore Schary, playwright and producer.

James S. Schramm, president, American Federation of Arts.

Dr. Emilio Segre, 1959 Nobel laureate, physics.

Irwin Shaw, playwright and novelist.

Sigmund Spaeth, musicologist.

Bella Spewack, playwright.

Sam Spewack, playwright.

Dr. Lyman Spitzer, Jr., physicist.

Edward Steichen, photographer and painter.

John Steinbeck, 1962 Nobel laureate, literature.

Isaac Stern, violinist.

Rex Stout, novelist.

Joseph Szizgetti, violinist.

Edgar Tafel, architect.

Dr. Edward L. Tatum, 1958 Nobel laureate, medicine and physiology.

Alice Toklas, novelist.

Louis Untermeyer, poet.

Dr. Harold C. Urey, 1934 Nobel laureate, chemistry.

Mark Van Doren, poet and short story writer.

Dr. Carl Van Vechten, novelist.

Gore Vidal, playwright.

Dr. Selman A. Waksman, 1952 Nobel laureate, medicine and physiology.

Dr. J. C. Warner, president, Carnegie Institute of Technology.

Dr. James D. Watson, 1962 Nobel laureate, medicine and physiology.

Prof. Victor F. Weisskopf, physicist.

Edmund Wilson, essayist.

Frederick J. Woodbridge, FAIA, architect.

William W. Wurster, FAIA, architect.

Bruno Zirato, orchestra manager.

William Zorach, sculptor.

TEXT OF STATEMENT

The call for a test ban treaty is based on the realities of our nuclear world. Such as:

1. Continued nuclear testing holds far greater risks for us than a test ban.

2. Continued testing would increase the tempo of the arms race and encourage the spread of nuclear arms to non-nuclear powers. This would vastly increase the likelihood of war.

3. The test ban treaty will not threaten our national security. Under the treaty's terms we can resume testing on a 3 months' notice if, for any reason, we feel our security is threatened.

4. The treaty will protect us and our children from exposure to further and perhaps lethal radio-active fallout.

5. The treaty will create a better climate on both sides for a slow-up in the arms race. It is a first and necessary step toward a rational, peaceful ordering of our world.

Mr. SPARKMAN. Madam President, on Monday last, during the morning hour, the distinguished senior Senator from Maine [Mrs. SMITH], placed before this body a series of questions relating to the nuclear test ban treaty. A member of the Armed Services Committee, the Senator from Maine directed her attention primarily on military security aspects of the treaty and in doing so did a capable job of focusing on questions that have troubled many Members.

Since the Senator from Maine did not direct her questions to any specific source, I have taken it upon myself to read through portions of the published and classified hearings recently concluded by the Committee on Foreign Relations as well as the committee's 30-page report in order to find some possible answers.

By posing her questions, our distinguished colleague has focused on one of the most difficult problems facing the Senate with regard to this treaty, for there are no single, factual answers

available to most of the questions posed. There are only speculative answers, but answers with high probabilities, based on interpretation of available facts. Final resolution of most of the Senator's questions would come, I fear, only from data collected after a full-scale nuclear war between the United States and the Soviet Union.

With this as a background, I offer to the senior Senator from Maine my answers to her questions—answers which have led me to support ratification of the treaty without any reservations, mental or otherwise.

First. Has the Soviet Union, through its most recent atmosphere test series, now achieved a nuclear advantage over the United States of a military or scientific significance?

Madam President, I give an answer which can be found in the RECORD, from the testimony of the experts.

According to Secretary of Defense McNamara:

In the area of very large yield weapons the Soviets appear now to have some advantage in the area of nuclear technology. They have demonstrated a device of 60 megatons which we believe could be weaponized or turned into a weapon at about a hundred megatons.

As a weapon, the Secretary went on to say, the 100-megaton bomb, delivered by missile, could be detonated at altitudes of 100,000 feet or more above cities to cause significant thermal damage over hundreds of square miles. Or the 100-megaton weapon could be delivered against hard site command posts buried in rock thousands of feet below.

As for our use of such a weapon, the Secretary pointed out the Joint Chiefs have held the position that smaller but still vastly destructive weapons of the 10-megaton range are militarily more advantageous than the 100-megaton weapon the Soviets may develop.

The Secretary concluded by stating:

I point out, therefore, that no consensus has ever been formed with regard to the wisdom of a 100-megaton versus a 50-megaton bomb, for this country and I could not predict with any confidence whether we would make a significant improvement investment in the larger bomb even in the absence of the proposed treaty.

But I can state with full confidence that the absence from our arsenal of a bomb greater than the one we can build under the treaty will not impair the effectiveness of our strategic forces.

There is another aspect of the high yield discussion outside the 100-megaton weapon.

The Joint Chiefs stated the U.S.S.R. is ahead of the United States "in weapons effects knowledge derived from high yield nuclear explosions."

On that point however, Dr. Harold Brown, Director of the Defense Department's Office of Defense Research and Engineering, disagreed and testified:

My interpretation of all the data, and it is available to the Chiefs as well as to me, indicates that although they have done more high yield tests those were no effects tests.

Their geography, and the associated activity does not indicate to me that they are effects tests.

With respect to high altitude blackout, the Chiefs say the Soviets have some data that

we do not have. I would say yes, and we have some data that they may not have.

In executive hearings, Mr. John McCone, Director of the Central Intelligence Agency, testified directly on this point and I would suggest to the Senator from Maine [Mrs. SMITH] and all my colleagues who share her desire for further information on this matter, that they read Mr. McCone's presentation in support of this treaty.

Madam President, the entire transcript of Mr. McCone's testimony is available in the files of the committee. though the testimony is confidential, it is permissible for any Senator to go to the committee room and read the transcript.

The second question posed by the Senator from Maine [Mrs. SMITH] was: Are we reasonably confident and secure in the knowledge that our ballistic missile retaliatory second strike force will survive and operate in a nuclear environment?

Again I find an answer as best I can from the testimony given before our committee during the course of the hearings. I quote Secretary McNamara, who testified as follows:

We know, and the Soviets know, that in the event of a surprise Soviet first strike, at least a substantial proportion of our Minuteman missiles will survive. Also we and they know that the Polaris submarines at sea and many strategic aircraft will survive. We can say with assurance, therefore, that even after a Soviet strike the total surviving U.S. strategic nuclear force will be large enough to destroy the enemy.

With regard to operation of our warheads in a nuclear environment, much testimony was received. I would note one statement by Dr. Norris Bradbury, Director of the Los Alamos Scientific Laboratory, to the effect that through underground testing, we can investigate many of the effects of nuclear detonations on other nuclear warheads—information which is useful in connection with the study and design of system requirements for both offensive and defensive nuclear warheads and their delivery systems. Much knowledge already exists here, but much more can be found.

With this question, also I suggest a reading of Mr. McCone's testimony.

Third. In seeking to slow down the arms race as a purported advantage of this treaty, will we adopt nuclear parity as the basis for deterring thermonuclear war rather than nuclear superiority?

Answer. On the general theory of "parity," I would cite General LeMay, who said we could not accept parity but added:

No one is going to start a war unless they think they are going to win.

So I believe, however, that this is not the case, and even if it were, who is to determine whether you have parity or not?

In other words, parity or any state on either side of it, could not be determined by actual warfare.

As to the administration's attitude toward parity, I cite Secretary McNamara's statement:

For even if the Soviets fail to abide by this agreement and even under the doubtful contingency of Soviet testing in the prohibited environments without being detected,

the United States will maintain its ability to survive a surprise attack with sufficient power to destroy the Soviet Union.

That, I suggest, is a commitment to nuclear superiority and not nuclear parity.

Fourth. Will the treaty, as claimed, prevent the proliferation of nuclear weapons when France and Red China refused to be bound and when underground testing is sanctioned for all nations whether they sign or not?

Answer. I have been unable to find where Senator SMITH found that proponents of the treaty have claimed it would prevent proliferation of nuclear weapons. It is interesting to note that Dr. Edward Teller, in his appearance before the Committee on Foreign Relations, said:

The argument, the strongest argument, in my mind, for the treaty is to stop the spread of nuclear weapons. We have been worried about such a spread for many years, and rightfully so.

We know, today, that it is easy to make nuclear explosions, and that any country that can acquire nuclear materials can make an explosion within a year. Yet it has been claimed that this treaty will stop proliferation.

That claim, lodged in Dr. Teller's mind, is not to be found in the record of administration witnesses.

Who made such a claim?

In his letter to the Senate of August 8, 1963, President Kennedy wrote:

While it cannot wholly prevent the spread of nuclear arms to nations not now possessing them, it prohibits assistance to testing in these environments by others; it will be signed by many other potential testers; and it is thus an important opening wedge in our effort to "get the genie back in the bottle."

Dean Rusk, in his statement before the Committee on Foreign Relations said:

The treaty will help contain the spread of nuclear weapons. We cannot guarantee it. Most of the countries with the capacity and the incentive to develop nuclear weapons over the next decade or so have already announced that they will accept the self-denying ordinance of the treaty. These countries do not include, by the way, mainland China or France.

While this does not guarantee that they will never become nuclear powers, their renunciation of atmospheric testing will act as a deterrent by making it much more difficult and expensive for them to develop nuclear weapons.

Secretary McNamara said it in slightly stronger fashion when he said in answer to a question at the committee hearing:

The treaty does not cover the subject of proliferation. That is clear.

The record therefore is clear that among treaty proponents the understanding is that the treaty, though not preventing proliferation, will act as a deterrent to proliferation. For his own reasons, Dr. Teller apparently read into these statements a claim that the treaty would prevent proliferation, a claim which was easy to attack if one wanted to find some reason to attack the treaty. Senator SMITH's question follows this inaccurate line of thinking which apparently stemmed from Dr. Teller's testimony.

Fifth. How is one to define or interpret that which shall constitute an under-

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The Chairman of the Joint Chiefs of Staff, Gen. Maxwell D. Taylor, testified: I attach very little importance to this, frankly . . . the whole very-high-yield weapons field is one which has very little, if any, military significance.

As part of this charge, it is argued that we are ahead in the testing of smaller nuclear weapons of the type which could be tested underground under the treaty, and that the Soviets would be free to catch up with us on this type of testing. Without the treaty, of course, the Soviets can test either underground or in other environments in an effort to catch up with us in this area. Along this line, Secretary McNamara had this to say:

But, by limiting Soviet testing to the underground environment, where testing is more difficult and more expensive and where the United States has substantially more experience, we can at least retard Soviet progress and thereby prolong the duration of our technological superiority.

In connection with the Secretary's observation that our own underground tests will be moving right along, it should be noted that, due to our greater experience in this environment, we should be progressing more rapidly than the Soviets.

Another similar attack against the treaty is that it would prevent us from testing and developing our antiballistic missile program. Dr. Harold Brown, Director of Defense, Research, and Engineering for the Department of Defense, testified:

The best present judgment is that our ABM development efforts are comparable in magnitude and success with those of the Soviets. Any deployed system which the Soviets are likely to have now or in the near future does not appear to be as effective, almost certainly not more effective than Nike-Zeus.

Secretary McNamara added another telling answer to this argument, when he testified:

One important point stands out in connection with the antiballistic missile: The ABM problem is dominated by factors unrelated to the treaty—by reaction speed, missile performance, that is, the rate of acceleration of the intercepted missile, traffic handling capacity, and capacity for decoy discrimination. A fuller understanding of the blackout phenomenon—which would result from tests prohibited by the treaty—might at most permit some reduction in the number of ABM radars required per ABM site.

Thus, with or without a test ban, we could proceed with the development of an ABM system.

Initially, one of the strongest arguments against the treaty was the danger of euphoria, the danger that our Government and our people, after ratification of the treaty, would assume that the cold war is over and that the efforts and sacrifices which we have been making during the long period of tension are no longer necessary. However, all administration spokesmen who testified before our committee displayed an awareness that the treaty by itself does not solve all our problems of international relations and defense and that it will still be necessary to "keep our guard up" and to take certain steps to avoid falling behind

our potential enemies in weapons development. The President, in his message transmitting the treaty, sounded the right note when he said:

This treaty is not a substitute for, and does not diminish the need for, continued Western and American military strength to meet all contingencies. It will not prevent us from building all the strength that we need; and it is not a justification for unilaterally cutting our defensive strength at this time. Our choice is not between a limited treaty and effective strategic strength—we need and can have both.

The strongest possible assurance is given in a letter of August 23, 1963, to Chairman RUSSELL from Deputy Secretary of Defense Roswell Gilpatric that the executive branch is firmly committed to and will vigorously support the safeguards which will be vitally needed whether or not this treaty is ratified. In that letter, Undersecretary Gilpatric discusses all that is being done and will continue to be done, as follows:

First safeguard: The conduct of comprehensive, aggressive, and continuing underground nuclear test programs designed to add to our knowledge and improve our weapons in all areas of significance to our military posture for the future.

Second safeguard: The maintenance of modern nuclear laboratory facilities and programs in theoretical and exploratory nuclear technology which will attract, retain, and insure the continued application of our human scientific resources to these programs on which continued progress in nuclear technology depends.

Third safeguard: The maintenance of the facilities and resources necessary to institute, promptly, nuclear tests in the atmosphere should they be deemed essential to our national security or should the treaty or any of its terms be abrogated by the Soviet Union.

Fourth safeguard: The improvement of our capability, within feasible and practical limits, to monitor the terms of the treaty, to detect violations, and to maintain our knowledge of Sino-Soviet nuclear activity, capabilities, and achievements.

It appears to me that very few of our countrymen have been carried away by their enthusiasm for the treaty and its possibilities. On the contrary, I have observed that most Senators—and it seems most of the American people, certainly most of the people who write to me—look on this treaty with a skeptical and questioning eye. Rather than this treaty encouraging a relaxation of the defense effort, it seems there is more talk of keeping our guard up and on the ready at this time, than there has been since the days of Quemoy-Matsu.

Accordingly, I regard the danger of euphoria as more imaginary than real, as applying more to the theoretical reaction of a large number of hypothetical people than to the actual reaction of the American people, constituted as we are and thinking as we do.

Closely related to the fear of euphoria is the fear of planned surprise abrogation of the treaty by our potential enemies.

The argument is that the Soviets may be luring us into this treaty with the intention of suddenly violating or abrogating it by means of a quick series of tests which will give them a commanding lead before we can initiate tests of our own.

If we follow through on the safeguards discussed in Undersecretary Gilpatric's letter and the President's letter as read by the Senator from Illinois [Mr. DIRKSEN], as we almost certainly would, we would be in as good a position as the Soviets to resume testing in that event, and we should not fall behind to any significant degree.

In addition, it seems that we have learned our lesson from the sudden resumption of Soviet tests in 1961 which caught us unprepared, and we would not be as likely to make that mistake again.

On this fear, Dr. Brown said at the hearings:

So, I think providing we are ready, a sudden abrogation of a treaty need not concern us greatly.

Another witness, Dr. George B. Kistiakowsky, professor of physical chemistry at Harvard University and former Special Assistant to President Eisenhower for Science and Technology, testified as follows on this point:

It would be a rather stupid maneuver on the part of the Soviets to break the treaty by abrogating and starting to test right away, whereas they have the full right under the treaty to abrogate, wait 3 months and then test.

The political disadvantages, bad odor of what they have done, will persist, and the technical gains of making certain atmospheric tests 3 months earlier are so infinitesimal that it just doesn't make any sense to me.

Finally, when all other arguments fail, the treaty's opponents fall back upon the argument that there is only one reason why the Soviets would agree now to a treaty which they have rejected in the past, and that is that they must be convinced that under present circumstances it works to their advantage and to our disadvantage. Undoubtedly, they must be convinced that it works to their advantage, but it does not necessarily follow that it works to our disadvantage or that they think that it does. Nations which enter into treaties usually recognize that it is to their mutual advantage to do so. Of course, we cannot know for certain what is in the minds of Soviet leaders in agreeing to this treaty, but we can readily see a number of reasons why enlightened self-interest might lead them to do so.

First. They are just as interested as we in preventing contamination of the air which we all must breathe and of the earth from which we all draw our sustenance. They are in as great danger of radioactive fallout as are we.

Second. They are no more desirous than we of being wiped out in a nuclear holocaust. They do not believe any more than we that anyone would win after a nuclear exchange. It would be a conflict which all would lose. Thus, they may recognize this treaty as one step toward control by mankind of the monster it has created.

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Third. There is good evidence that the people under Soviet domination are becoming more and more dissatisfied with their low standard of living and are demanding more consumer goods. Perhaps there is a hope among their leaders that the treaty will make it possible to shift some of their means of production away from this highly expensive weapons production to that of consumer goods.

Fourth. There is evidence that the rift between the U.S.S.R. and China is genuine, and they may feel that the treaty helps them in their growing competition with their great Communist rival.

Fifth. They understand the danger of proliferation. They see that they would benefit, as would we, from the resulting discouragement of other nations from developing nuclear weapons.

Now, Mr. President, as the evidence of the desirability of U.S. approval of the treaty piles up, the opponents shift from a head-on attack of the treaty to the oblique to the enfilade. Opposition from the flank, it is sometimes called. They call these reservations and clarifications.

One of the most dangerous of these is the one offered by the able and distinguished junior Senator from Arizona, which would provide that the treaty would not go into effect until the U.S.S.R. has removed its troops and weapons from Cuba and arrangements have been made for international inspection within Cuba to confirm such removal.

I believe it is a fair and truthful statement, Mr. President, that no one has been more concerned than the junior Senator from Florida over the Communist takeover of Cuba.

I believe I was the first Member of the Congress to warn of the deteriorating situation in Cuba and of the danger Castro's movement presented to the security of the Western Hemisphere.

In those days, the Senator from Florida was abused by some of the press and by some of his colleagues for his warnings. After Castro's seizure of power, the Senator from Florida called upon the administration then in power to adopt a firmer policy against the tyranny which was enslaving Cuba, and continued to urge the new administration to the same effect.

I believe I was the first to call for cutting off all trade with Cuba.

I have been rather critical of the lack of a strong and affirmative policy against Castro's Cuba during the present administration, although I cheered the strong stand taken by the President during the fall of 1962, which resulted in a splendid, bloodless victory for our way of life and for freedom everywhere.

I have continued to urge recognition of a Cuban Government in exile and other more positive steps looking toward a free, independent, democratic Cuba.

So, the amendment of the Senator from Arizona is one that strikes a sympathetic chord within me. It is one that under almost any other circumstances I would support, for the Senator is indeed ringing a bell.

But, Mr. President, I respectfully submit that the bell he is ringing is not at

the right address. This amendment is not germane to this treaty. It is clear that if it were added to this treaty, it would not result in the removal of the Russian troops and weapons from Cuba, but it would result in a defeat of this treaty.

For, obviously, it would require renegotiation of the treaty after some 91 nations have signed it. It is evident that the Soviet Union, and probably other nations—possibly Great Britain, Italy, West Germany and others—would not agree to this reservation and that its result, in practical effect, would be merely to kill the treaty without serving any useful purpose whatever in decreasing the use of Cuba as a Soviet military base or eliminating the Castro regime in Cuba.

So, Mr. President, I believe any Senator can consistently and logically vote against the amendment of the Senator from Arizona and at the same time share with the Senator his concern over conditions now existing in Cuba and work with him and others in ways and means of bringing about the downfall of Fidel Castro and the returning of freedom to Cuba.

In searching his heart and conscience for the right decision on this momentous issue each Senator must decide what our Nation's goals should be and which road offers the least risk and best hope toward reaching those goals.

If our objective should be to make certain that more millions of Russians than millions of Americans would be killed in a future nuclear war, then perhaps we might come to the conclusion that the least risk would be to allow the present nuclear arms race to continue unchecked.

However, I submit that that is not the goal which most Senators and most of the American people are pursuing, for I am sure that most of us recognize that that road leads to the most frightful—the most egregious—consequences for human life on this planet.

As I interpret our wishes, our hopes, and our fears, the goal which most of us earnestly seek is the continuation of our free American way of life with a minimum of possibility of wholesale nuclear slaughter and the destruction of ourselves and other peoples.

The treaty's proponents have recognized throughout that there are risks in this treaty. Risks are unavoidable in any step in international relations we take in the dangerous times in which we live.

However, the risks in the treaty have been reduced to a minimum by the careful planning and negotiation which preceded it. In seeking the goal which I believe we are seeking, the risks of ratifying the treaty are much less than the risks of rejecting it.

It would not disarm us. It does not compromise us. It does not lessen our commitment to preserve our freedom and that of other nations who seek our assistance. But our signing does indicate to the remainder of the world that we recognize the United States and the Soviet Union have created a "Frankenstein monster" which must be controlled, and that we are willing to take a small step with the Soviets toward controlling it.

There are some military people, some scientists, and some Senators who have expressed beliefs that the risks outweigh the benefits from the treaty.

We can have the greatest respect, as does the Senator from Florida, for the able Senators who are opposing ratification, and for a military man such as Gen. Thomas S. Power and a scientist such as Dr. Edward H. Teller, both of whom have opposed it.

But we should also have great respect for the competence in this field of the Secretary of State Dean Rusk, the Secretary of Defense Robert McNamara, Director of the CIA John McCone, who used to be Assistant Secretary of the Air Force and who under the previous administration was Chairman of the Atomic Energy Commission. Particularly should we have respect for those men chiefly responsible for the Nation's security, the Joint Chiefs of Staff.

Mr. President, during World War II, I had the honor of serving in the U.S. Marine Corps. During the long, arduous, and sometimes sad days, I developed a deep and abiding respect for the courage and dedication of the leaders of the U.S. Marine Corps.

I particularly admired the selflessness and the bravery of a marine officer, David W. Shoup. He has received this Nation's highest decoration for heroism in combat, the Congressional Medal of Honor. Shoup was appointed Commandant of the Marine Corp by President Eisenhower. He sits with the Joint Chiefs of Staff. He appeared with other chiefs before our committee and in behalf of the treaty. His independence is unquestioned; his integrity is solid gold. When he said he was very much in favor of this treaty being initialed, I am frank to say that carried much weight with me.

But he and others whose judgment we can respect on a matter of this importance have unreservedly come out for the treaty, as have the former Commander in Chief of Allied Forces in Europe, the former President of the United States, Dwight D. Eisenhower, former President Harry S. Truman, and a host of others much too long to outline here.

This is too important an issue to be considered on partisan grounds. And I am proud of Senators again, for always, on matters of such gravity and consequence as this treaty, there is no room for political considerations. That is why we find such Senators as the distinguished and courageous minority leader [Mr. DIRKSEN], the ranking minority member of the Armed Services Committee [Mr. SALTONSTALL], the senior Senator from Vermont [Mr. AIKEN], and others all supporting this test ban treaty in the interest of their country.

Mr. President, all life is a risk, and those who seek to risk nothing, achieve nothing.

The ratification of this treaty is a calculated risk, and one I believe we must take, for it offers the greatest hope and the least risk toward the achievement of the supreme national objectives in the minds and hearts of American people.